short wave magazine

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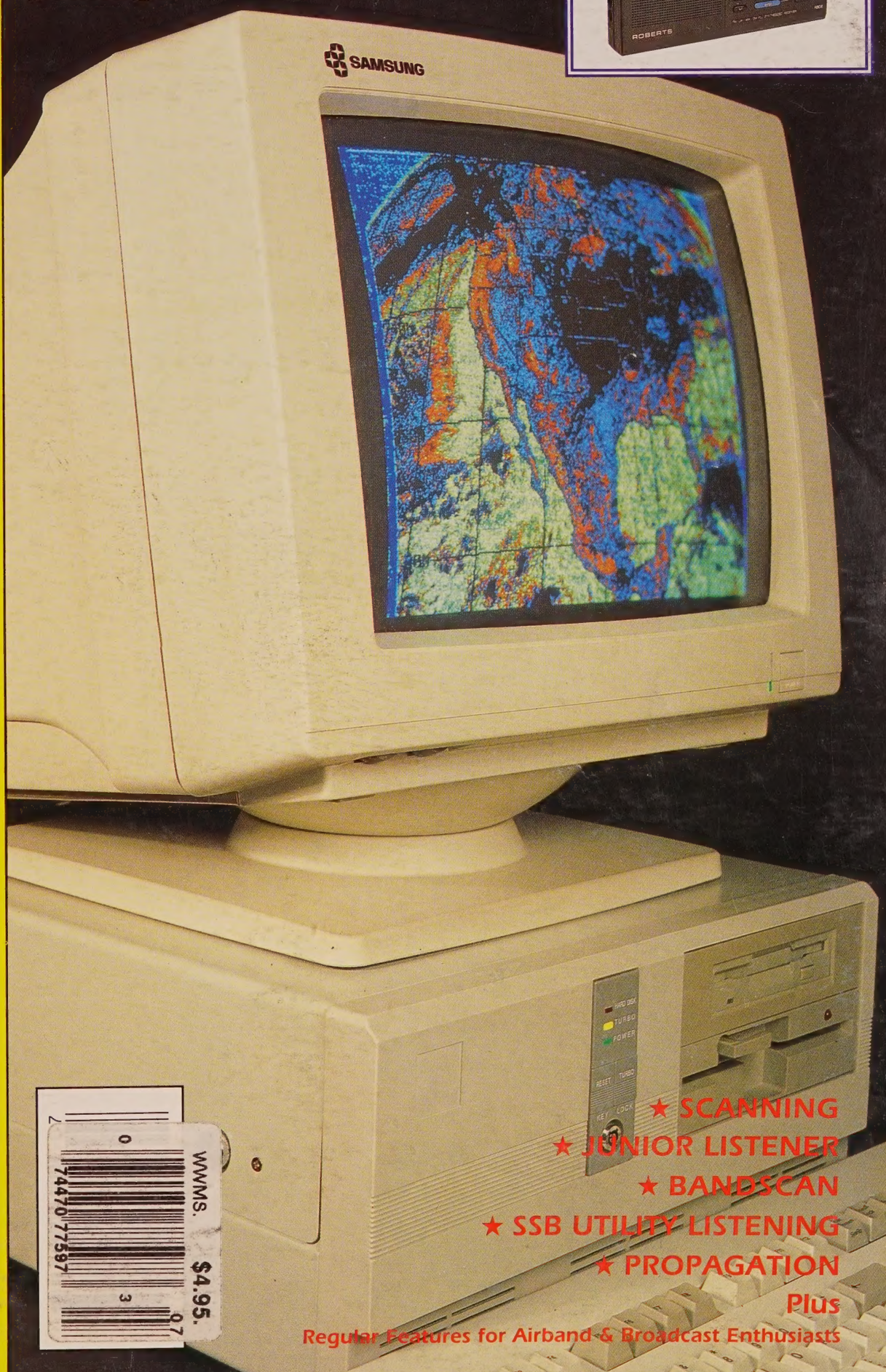

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Cover: The IBM compatible PC has become popular with radio enthusiasts. Dick Ganderton describes how he built his own PC XT from easily obtainable components. The computer on the cover is his home-made PC, now upgraded to a 286 AT with VGA colour graphics. The program being run is PC HF FAX from Comar Electronics.

short wave magazine
PC SPECIAL
Build your own computer
Software & equipment for your PC
Benito - A utility decoding package
NEW ROBERTS RADIO RECEIVER REVIEWED

...GOOD LISTENING

letters

IF YOU HAVE ANY POINTS OF VIEW THAT YOU WANT TO AIR PLEASE WRITE TO THE EDITOR. IF YOUR LETTER IS USED YOU WILL RECEIVE A £5 VOUCHER TO SPEND ON ANY SWM SERVICE.

The Editor reserves the right to shorten any letters for publication but will try not to alter their sense. Letters must be original and not have been submitted to other magazines.The views expressed in letters published in this magazine are not necessarily those of Short Wave Magazine.

SWM SERVICES

Subscriptions

Subscriptions are available at £19 per annum to UK addresses £21 in Europe and £22 overseas. Subscription copies are despatched by Accelerated Surface Post outside Europe. Airmail rates for overseas subscriptions can be quoted on request. Joint subscriptions to both Short Wave Magazine and Practical Wireless are available at £32 (UK) and £37 (overseas).

Components for SWM Projects

In general all components used in constructing SWM projects are available from a variety of component suppliers. Where special, or difficult to obtain, components are specified, a supplier will be quoted in the article.

The printed circuit boards for SWM projects are available from the SWM PCB Service.

Back Numbers and Binders

Limited stocks of most issues of SWM for the past five years are available at £1.65 each including P&P to addresses at home and overseas (by surface mail).

Binders, each taking one volume of the new style SWM, are available price £4.50 plus £1 P&P for one binder, £2 P&P for two or more, UK or overseas. Please state the year and volume number for which the binder is required. Prices include VAT where appropriate.

Orders for p.c.b.s, back numbers, binders and items from our Book service should be sent to **PW Publishing Ltd., FREEPOST, Post Sales Department, Enefco House, The Quay, Poole, Dorset BH15 1PP**, with details of your credit card or a cheque or postal order payable to PW Publishing Ltd. Cheques with overseas orders must be drawn on a London Clearing Bank and in sterling.

Credit card orders (Access, Mastercard, Eurocard or Visa) are also welcome by telephone to Poole (0202) 665524. An answering machine will accept your order out of office hours.

Silk Purse or Sow's Ear?

The advent of a whole variety of v.h.f/u.h.f. scanning receivers, some in desk-top form and some as hand-held units, has brought v.h.f. listening to a wide range of enthusiasts who have never before been able to enjoy this often fascinating hobby. In the past, v.h.f. and u.h.f. receivers having a wide frequency range have been extremely specialist items, often manufactured at enormous cost, and usually for professional or military users. Prices of such receivers were prohibitively high for the private individual to afford and only those who located occasional releases to the surplus or second-hand market were privileged to be able to listen to the fascinating world of v.h.f. and u.h.f.

All this changed a few years ago when the first Japanese manufacturers began producing small desk-top v.h.f. receivers that the general public could afford. The use of low cost microprocessors to control many functions gave the receivers very comprehensive (although sometimes incomprehensible) functions, and the various makers soon began to vie with each other to produce ever more complex (and more unusable) designs.

The seemingly never ending search by some manufacturers to provide more and more complex features has led to a crazy situation where the average user is totally baffled by the complicated procedures necessary to make some of these wonder radios actually work. Those of you who have tried to release the 'Search Bank Lockout' on a well-known hand-held scanner will know what I mean; it often requires a return to the dealer for a 'sort-out'. Even I can't remember how to work the thing - and I wrote the handbook for it!

The appearance of the hand-held v.h.f./u.h.f. scanning radio has made the hobby of eavesdropping (for that is what it is) even more popular, and the dubious habit of listening to private telephone conversations has become widespread, and to my mind distasteful. However, the aircraft or marine enthusiast can enjoy a closer understanding of how the air and marine services operate, and of course such receivers are used professionally in many organisations such as the lifeboat service, the Fire Brigades, airport ground services, and so on.

However, miraculous these hand-held scanners may seem to be, it is nevertheless a fact of life that you cannot expect good performance from a radio that attempts to cover a ludicrously wide frequency range whilst costing less than three hundred pounds. To obtain even moderately good performance at v.h.f. and u.h.f. you should be looking at costs of at least three to four times this amount - but having said that, the hand-held radios provide a lot of fun and an introduction to the hobby.

All was well when these low cost radios were restricted to v.h.f. and u.h.f., but when some half-witted designer in search of 'new' features decided to extend the range downwards to include h.f. and l.f. bands, the inherent poor performance of the receivers was exposed for all to see. The accepted border pointed of 30MHz between h.f. and v.h.f. is not simply a matter of tradition, it is a real boundary between totally different design requirements and techniques. The hand-held v.h.f./u.h.f. scanners with the sensitivity of a house brick and adjacent channel selectivity of the Golden Gate Bridge are absolutely hopeless when asked to cope with the 6MHz broadcast band or a weak signal amidst strong ones. The attempts by some manufacturers to add s.s.b. reception to such radios are laughable in their lunacy. Ask yourself, how are you going to tune an s.s.b. signal with tuning increments of 5kHz? I know, they provide a 'fine tune' control - have you ever tried to use such a thing? I used to get better results with a converted 19 Set. (And the 19 Set was more sensitive).

For v.h.f. and u.h.f. casual listening the present generation of hand-held scanners do a good job, and most of them are quite remarkable value for money. However, when it comes to h.f. listening, buy yourself a 'proper' short wave receiver and get the best from the hobby. Come to that, if your particular interest is airband listening, you will get much better performance from one of the specialist airband receivers that have the combined merits of being designed for the job in hand and are simplicity itself to use. The hand-held all-singing all-dancing scanners often sign slightly off-key and dance with flat feet when real performance is needed.

You simply can't make a silk purse out of a sow's ear, although the sow's ear will presumably enable you to listen to the grunting from the next pen (no adjacent grunt channel rejection?).

It's only my opinion, of course, but I do carry 40 years of experience in communications radio, and it is time someone began to tell the truth.

John Wilson
Engineering Director
Lowe Electronics Ltd

Dear Sir

Please can we be assured that all of the names appearing in the April 1991 issue of *Short Wave Magazine* are genuine? Surely, it is more than a coincidence that the vast majority of these 'handles' are associated with famous people, sayings, titles, etc.

A glance at the list below will suffice to convince all but the densest of scanners:

(D.H.) Lawrence Harris
Bill (Cilla) Black
Chas (Max) Miller
John (Terry) Waite
Stan (Laurel) Crabtree
P.C. (Police Constable) Mitchell
Ron (Moody) Ham
Roger (Rabbit) Bunney
Peter (Sea) Shore
(Crystal) Mike Richards
Dick (Turpin) Ganderton - (ne Mahatma Ghandi-ton?)

Yours doubtfully
G1BF, He who CQ'th not.

Dear Sir

I though you might be amused by the following information taken from *WRTH 1991* page 213. Radio Veritas Asia (starting at the 4th line "Chairman H.E.J. Cardinal Sin"!

A.L.Baker
Cornwall

Revex RA980 Wide Band Active Antenna

Do you have a scanner that is not quite as sensitive as the latest models? Do you have trouble in picking up those weak signals? Do you have trouble in erecting an outside antenna? Is your only antenna the helical or telescopic whip supplied with the set? Do you have problems with reception on your portable TV? Is f.m. reception difficult in your area?

If the answer to any of these questions is yes, the RA980 could transform your listening pleasure. This active antenna system has been designed to enhance the reception of signals in the band 40 to 950MHz.

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The closing date for this offer is 31 July 1991.

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SWM JULY 1991 ANTENNA OFFER

grassroots

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Lorna Mower
Short Wave Magazine,
Enefco House,
The Quay, Poole,
Dorset BH15 1PP

RAE Courses

Birmingham: The Summer 1991 RAE course begins on June 6 at a cost of £63.60. The course fee includes tuition, books, folder, paper, calculator and refreshments at break time. The examination fee is extra. The course is run by Chris G8YPE, who has eight years of experience in tutoring people through City & Guilds 765.
They offer free tuition until pass, providing that the student takes every available examination. B & C Electronics, 51 Sir Hiltons Road, West Heath, Birmingham.
Tel: 021-475 2426.

Doncaster: Doncaster College will again be running the City & Guilds course leading to the RAE from Spetember. The classes will be on a Tuesday evening from 1800-2000. Anyone interested should contact Mike Parkin G6OSD at the School of Electrical & Electronic Engineering, Tel: (0302) 322122 ext 287 or 282. There will also be a basic practical electronics course on a Wednesday evening 1800-2000, the tutor being Trevor Jones, who can be contacted on the same extension.

Swinton: The RAe class will be held at Wardley Adult Education Centre, Swinton and will commence abouth the middle of September. Further details may be obtained from William Stevenson.
Tel: (0836) 668287.

London: The City of Westminster College (formerly Paddington College), will be running a RAE evening course commencing early Spetember 191 (for May 1991 examination). Both Class A and Class B licences will be catered for (i.e. a Morse course will run concurrently). Professional College lecturers will conduct the course. Prospective candidates should contact the college - Science and Technology Dept., Ann James. Tel: 071-723 8826.

Acton, Brentford & Chiswick RC: 3rd Tuesdays, 7.30pm. July 16 - My Favourite Key, discussion and demo by all members. Paul Truitt. 071-938 2561.

Bedford & District ARC. Tuesdays, 7.30pm. Allen's Club, Hurst Grove, Bedford. Glenn. (0234) 266443.

Bromley & DARS: 3rd Tuesdays, 7.30pm. The Victory Social Club, Kechill Gardens, Hayes. July 16 - Top Band DF Hunt, 7pm. Geoffrey Milne. 081-462 2689.

Bromsgrove ARS: 2nd & 4th Tuesdays, 8pm. Aston Fields Working Men's Club, Stoke Road, Astonfields, Bromsgrove. J. Yarnall. (0527) 503024.

Bromsgrove & District ARC: 2nd Fridays. Avoncroft Museum of Buildings & Arts Centre, Bromsgrove. July 12 - Visit Raycomm Showroom. Trevor Harper. Bromsgrove 33173.

Chelmsford ARS: 1st Tuesdays, 7.30pm. Marconi College, Arbour Lane, Chelmsford. July 2 - Amateur Satellites by G3IOR. Roy Martyr. Chelmsford 353221 ext 3815.

Coulsdon ATS: 2nd Mondays, 7.45pm. St Swithun's Church Hall, Grovelands Road, Purley. July 8 - 144MHz Fox Hunt, meet Grovelands Rd. Andy Briers. 081-668 7004.

Coventry ARS: Fridays, 8pm. Baden Powell House, 121 St Nicholas St, Radford, Coventry. June 28 - Night In the Air - Gliding Trip, July 5 & 19 - Night on the Air, 12th - Trip to Coventry Air Museum, 7pm, 26th - Outdoor 144MHz DF Contest.. Neil. Coventry 523629.

Dorking & District RS: 2nd & 4th Tuesdays, 7.45pm. Friends Meeting House, South Street, Dorking. July 9 - Informal at Parrot Forest Green, 23rd - Portable Activity Night at Devils Dyke, 7pm. John Greenwell. (0306) 77236.

Edgware & DRS. Watling Community Centre, 145 Orange Hill Road, Burnt Oak. June 27 - VHF FD Briefing, July 11 - Air Navigation by Godfrey Manning, 25th - Kites by Roy Charlesworth. Hank Kay. 081-205 1023.

Grafton RS: Fridays, 8pm. Holy Trinity Church Hall, Stapleton Hall Road, London N4. July 5 - Detection Equipment, 19th - WWII Radio Interception. Rodney Harrigan. 081-368 8154.

Hastings E&RC: 3rd Wednesdays, 7.45pm. West Hill Community Centre, Croft Road, Hastings. Fridays, 8.30pm. Ashdown Farm Community, Downey Close. Reg Kemp, 7 Forewood Rise, Crowhurst.

Horndean & DARC: 1st Thursdays, 7.30pm. Horndean Community School, Barton Cross, Horndean. July 4 - Coast Guard Systems. S.W. Swain. (0705) 472846).

Keighley ARS: Thursdays, 8pm. The Cricket Club, Ingrow, Nr Keighley. July 4 & 11 - Natter Night, 18th - Packet Radio on the Air, 25th - Construction Project with G3TDZ. Kathy Bradford. (0274) 496222.

Lothians RS: 2nd & 4th Wednesdays, 7.30pm. The Orwell Lodge Hotel, Polwarth Terrace, Edinburgh. P.J. Dick GM4DTH, QTHR.

Loughton & DARS: 2nd & 4th Saturdays, 7.45pm. Loughton Hall, Rectory Lane, Loughton, Essex. June 28 - Calibration & Alignment Evenings, July 12 - Computers in Banking by G4KCK, 26th - Visit by RLO. Mike Pilsbury G4KCK. 081-504 4581.

Mansfield ARS: 1st Thursdays, 8pm. The Polish Catholic Club, off Windmill Lane, Woodhouse Road, Mansfield. July 4 - HF Activity Night. Mary. (0623) 755288.

Midland ARS: 3rd Tuesdays, 7.30pm. Headquarters Unit 22, 60 Regent Place, Birmingham B1 3NJ. July 16 - Annual Rig Check. John Crane. 021-742 8712 (evenings).

Mid-Sussex ARS: Thursdays, 7.45pm. Marle Place Further Education Centre, Leylands Road, Burgess Hill. June 27 - Astronomy by Eric Zucker. John Fuller G0OIO.

Mid-Warwickshire ARS: 2nd & 4th Tuesdays, 8pm. St John Ambulance HQ, 61 Emscote Road, Warwick. July 9 - 144MHz DF Foxhunt, 7pm, 23rd - PMR Equipment, What to buy & how to convert it. Kenilworth 513073.

Oxford & DARS: 2 & 4th Thursdays, 7.30pm. British Legion Club, Marston, Oxford. G8PX.)Oxford 58785.

Norfolk ARC: Wednesdays, 7.30pm. The Norfolk Dumpling, The Livestock Market, Harford, Norfolk. July 3 - Evenings at Eastern Communications and the seaside!, 10th - Mobile DF Hunt, 17th - Informal & Committee Meeting, 24th - Keeping the Trains Running by Mike Rowe of BR, 31st - Quiz with a Difference. Jack Simpson. (0603) 747992.

North Bristol ARC: 3rd Fridays. S.H.E. 7, Braemar Crescent, Northville, Bristol. J. Chris. (0454) 616267.

North Devon RC. 1st Wednesdays, 7.30pm. SWEB Main Depot, Barnstaple. J.A. Kelly. Tel: (0271) 23525.

North Ferriby United ARS Sundays, 8pm. North Ferriby United Football Club Social Room, Church Road. June 28 - Vintage Radio by G4IGY, July 5 - HF Linears by G3ZRS, 12th - Extra Ordinary Meeting, 19th - A Trace of Flutter by G4TGE, 26th - Night On The Air. F W Lee. (0482) 650410.

Plymouth RC: 1st & 3rd Thursdays. The Community Centre, Raglan Road, Devonport.

Preston ARS: Alternate Thursdays. The Lonsdale Sports & Social Club, Fulwood Hall Lane, Fulwood. July 25 - Preston Holiday Week. Eric Eastwood. (0772) 686708.

Rhyl & District ARC: July 1 - Homebrew Construction, 15th - Electrical Regulations. Edward Shipton. (0745) 336939.

Rugby ATS: Tuesdays, 7.30pm. Cricket Pavilion, outside Rugby Maritime Radio Station. July 16 - 144MHz DF Competition, round 3. Peter Wells. (0455) 552449.

Salisbury R&ES: Tuesdays. Grosvenor House, Churchfield Road, Salisbury. July 2 - Weather Satellites, 23rd - Video on Antennas and their Design by Louis Varney G5RV. Bert Newman G2FIX, QTHR.

South Bristol ARC: Wednesdays. Whitchurch Folkhouse Assoc, Bridge Farm House, East Dundry Rd, Whitchurch. July 3 - The Hobby of the Space Age by G6PJS, 10th - Invitation to a Slide Show by Brian, 17th - Homebrew 1st evening for Terry Dunsford Trophy with G4YTH, 24th - CW Activity Evening. Len Baker. Whitchurch 832222.

Southdown ARS. 1st Mondays, 7.30pm. Chasely Home for Disabled Ex-Servicemen, Southcliff, Bolsover Road, Eastbourne. Wednesdays & Fridays, 7.30pm. Hailsham Leisure Centre, Vicarage Road, Hailsham. July 1 - Barbecue.

Thornbury & DARC: 1st & 3rd Wednesdays, 7.30pm. United Reform Church, Chapel Street, Thornbury. July 3 - Test Equipment by G8VPG & G4BVK, 17th - HF Activity/Natter Night.

Three Counties RC: Alternate Wednesdays, 7.30pm. The Railway Hotel, Liphook, Hants. July 3 - UoSAT & OSCAR satellites by Craig Underwood, 17th - Telecommunications in the North Sea by a Rep from BP, 31st - Computer Night. Dave G4VKC.

Torbay ARS: Fridays, 7.30pm. ECC Social Club, Highweek, Newton Abbot. . Walt. (0803) 526762.

Trowbridge & DARC: 8pm. TA Club, Trowbridge. July 3 - Annual Picnic, White Horse Hill, from 6.30pm, 17th - Social & Open Evenings. Ian Carter. (0380) 830383 evenings.

West Kent ARS: 3rd Fridays, 8pm. The School Annex, Albion Road, Tunbridge Wells, Kent. July 5 - Informal Meeting. John Taylor. (0892) 664960.

Wimbledon & DARS: 2nd & last Fridays, 7.30pm. St Andrews Church Hall, Herbert Road, SW19. June 28 - General Activity Evening, July 12 - Weather Satellite Update by Dave Young, 26th - Pre-camp Briefing. Chris Frost. 081-397 0427.

Yeovil ARC: Thursdays, 7.30pm. The British Red Cross Society, 72 Grove Avenue, Yeovil. June 27 - Natter Night, July 4 - A Peak Reading RF Voltmeter by G3MYM. David Bailey G0NMM, QTHR.

York ARS: Fridays, 7.30pm. York City Social Club, Bootham Crescent, York. K.R. Cass G3WVO, 4 Heworth Village, York.

junior listener

Featured Listener

Here's a new idea for the column. How about featuring one listener and their interests? Not only will this give you a chance to 'blow your own trumpet' but you may get a few tips on how you could improve your results. If you'd like to be featured in this section just write to me giving as much detail as you can. You should make sure you include your name, address, age, equipment, interests and any other points that may prove helpful. If you can include a photograph this would brighten up the column no end! In short, please send as much information as possible. To make sure this idea gets off to a good start, I've arranged a few special prizes for the first few who write.

To start the ball rolling, this month I'm featuring **Jonathan Tagg** from Coleraine in Northern Ireland. Jonathan is fourteen years old and has been interested in short wave listening since receiving a Steepletone MBR-7 as a Christmas present last year. Although the Steepletone has its own antennas, Jonathan uses an external antenna to improve his short wave reception. This antenna is about 10m long and runs from his house to a cherry tree at the bottom of the garden. As a form of antenna tuning unit, he uses a variable capacitor that's connected between the antenna and the external antenna socket on the radio. For an earth, he's made a connection to the copper pipe of the central heating system. However, Jonathan reports that this makes very little difference to the reception.

He's sent me a list of his loggings to date and he's doing very well indeed. The list is long and includes Radio Australia, HCJB in Ecuador and United Arab Emirates.

One of the main problems with the Steepletone is the lack of a digital frequency read-out. This makes it difficult to find individual stations on the busy short wave bands. The only answer is to set the dial to the approximate frequency and tune around until you find the station you want. This can be a bit frustrating but, on the plus side, you never know what other interesting stations you'll find!

Another aspect of Jonathan's listening is the v.h.f. bands where he often monitors the air band. The only problem is that he can only ever hear the aircraft. This is because the nearest airport is too far away for v.h.f. reception. With the help of his Dad he's tried using an external v.h.f. dipole. However, he reports that this made very little difference to the air band reception. This is not really surprising as the Steepletone has a good sized whip antenna and height is not too important for receiving aircraft.

As far as reading material goes, Jonathan enjoys *Short Wave Magazine* but would like to see more tips on DXing. His pet hate is abbreviations and would like to see more explanations in the magazine. I know that the editorial team are trying very hard to improve this weakness and you should find abbreviations explained with each article.

That about sums up Jonathan's station, but if you've any hints or ideas, please write to me and I'll pass them on to Jonathan.

Advice Pals

Keith Fox of Sheffield has written with an interesting new twist to the pen-pals idea. Kevin is not a 'Junior Listener', but an experienced operator who's very willing to help newcomers get started. In his letter he recalls an early letter he wrote to a magazine complaining about all the abbreviations they used. The reply suggested that he should find out for himself as a form of self education! It is partly because of this that he is so keen to help.

To start the ball rolling Kevin has offered his services and, being a wheelchair user, he's particularly keen to help disabled listeners. To join in with the Advice Pals scheme just write to me giving the following details:

Name
Address
Age
Main interests

I'll then pair-up helpers and listeners according to their interests. I'd also be very pleased to hear any other ideas you may have for extending this idea.

Sorry - BNC Connectors will follow later.

Jon Jones
PO Box 59
Fishponds
Bristol BS16 4LH

Helpline

If you read this column regularly, you'll remember that I put out a plea for help on behalf of Mark Farr. Mark, who was building a project that needed some Denco coils that are no longer available. You'll be pleased to hear that I've had an excellent response from several generous readers. Mr Hunt from Sheffield has sent a pair of range three and five coils and I've now passed these on to Mark. Mr Harvey of Teignmouth and Jim Brown of Falkirk have also offered to help, so thanks to them as well.

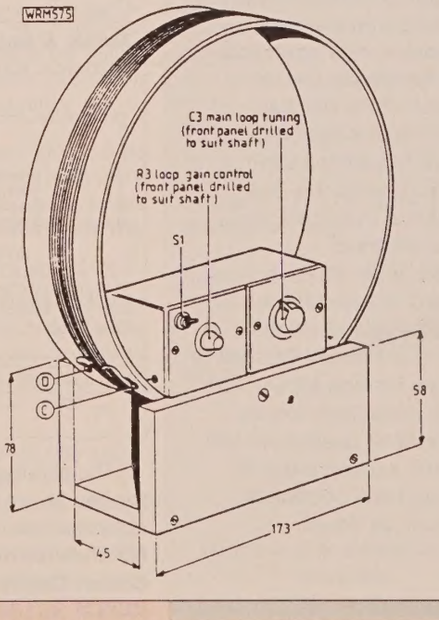
I've been so pleased with the response that I've decided to run Helpline as a regular feature. So, if you've any sticky problems that you need a hand with, just write in with the details. I'll either answer the query myself or print it in the column. When writing please include as much detail as possible so I have the best chance of finding the right answer. Also, don't forget to include your name address and age.

Medium Wave News

I've recently been sent a copy of a very interesting newsletter published by the Medium Wave Circle. This group exists to promote interest in medium wave DXing and provides all manner of specialist information. A look through the current newsletter reveals tips on building loop antennas, a feature on Independent Local Radio and a healthy selection of news and loggings. As you can see this is all very useful to the medium wave enthusiast. If you're interested in finding out more about this group send an s.a.e. to Harold Emblem, 137A Hampton Road, Southport PR8 5YD.

More Loops!

Following the April feature on medium wave DX and loop antennas, **James Stone** has written with his experiences. James has built the 'Sooper Loop' that was featured back in the July '86 issue of *Practical Wireless*. One great attraction of this unit, other than its performance, was its ease of construction. Checking back on the project, I see it was rated for beginners. Connection to the receiver was via the external antenna socket. But for those without this facility, there's a novel ferrite injector that provided a coupling to the internal antenna. This means that the 'Sooper Looper' can be used by most receivers. If you'd like to try your hand at building one of these, back copies of the magazine can be obtained from the editorial office. The price is £1.65 inclusive of post and packing.



news

TV News

Canal Plus, the expanding French TV channel, is to expand its Belgian operation - Canal Plus Communaute Francaise de Belgique - into Flanders and Holland.

The Bulgarian secret services have commenced jamming of the 'Program 2 Studio Beograd' Ch. R32 and of the 'Program 1 Studio Beograd' Ch. R23 from two TV towers in Sofia (at Kopitoto and Konyovitsa) to prevent viewing of the Yugoslavian programming, previously on Ch. R25.

Greek TV programme 1 has also been jammed from the Kaluta transmitter site (as reported in the newspaper *Popkrepa* on March 5). Independent TV has arrived in Czechoslovakia with the opening on Chs R21/29 in Prague of 'NTV-Nezavistia Televise' with a two hour daily programme at 1830 local (test-card 1700), repeated at 2300 and the next morning. The low powered transmitter is sited in Praha-Jizni Mesto district, but will move to a proper TV mast at Zizkov. At the time of writing the authorities had not yet given the station an official licence to operate!

Textavarp is the Icelandic Teletext service of the RUV and starts this coming September. NICAM stereo TV should commence early 1992 in Iceland.

The federal states of Mecklenburg-Vorpommern, Berlin and Brandenburg are combining into a single broadcast station operation called 'Nordostdeutscher Rundfunk', SFB will also merge into this new station, the main HQ will be sited in Berlin and produce a 3rd programme over the former DFF transmitters.

MESECAM - this is a 'standard' quoted for multi-standard TVs and videos though it is actually SECAM B/G. Philips include MESECAM on their sales literature so that intending customers will know that a given piece of equipment will operate in areas such as Saudi.

DXpedition to Ecuador

John Wilson, Engineering Director, Lowe Electronics Ltd., hands over an HF-225 receiver to Dick Ganderton, Editor SWM, for use on the SWM/HCJB DXpedition to Ecuador. The HF-225 recently was awarded the 'Best Receiver of the Year' by the *WRTH*.

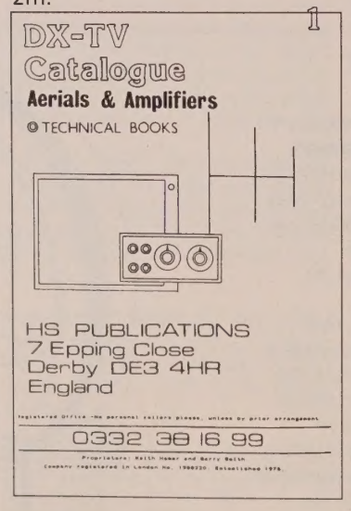
You'll be able to read more about the trip in a forthcoming issue of SWM.

photo Peggy Ganderton

New DX-TV Catalogue

A new illustrated catalogue is now available from HS Publications. It combines long-distance TV and domestic equipment with an extensive range of technical publications covering DX-TV, station identification, amateur radio, short wave listening, antennas, propagation plus television and video theory.

The equipment side covers a wide range of products including antennas (from dipoles to multi-element arrays), mast-head and distribution amplifiers, filters, accessories, hardware and the D-100 converter system. The compact VF-100 v.h.f. TV array is also included covering all terrestrial channels, with a total boom length of less than 2m.



The catalogue is available for 66p (or by sending 3 1st class stamps or 4 IRCs) from: **HS Publications, 7 Epping Close, Derby DE3 4HR. Tel: (0332) 381699**.

American Kits in the UK

Following the successful visit to the Dayton HamVention with PW Publishing, Ray Withers of Raycom has announced a new UK dealership for some new very exciting amateur radio and s.w.l. products.

Ramsey Electronics Inc has been supplying the US radio amateur and enthusiasts market with kits and projects for over ten years.

Available soon will be an airband receiver kit (tuneable 110-136MHz) at £29.50, an active antenna kit (h.f. and v.h.f. with built-in whip antenna) £29.50, a short wave receiver kit (any 2MHz band, 4-11MHz) at £29.95 and various amateur band receivers. Optional cases are available at around £13.50 each.

Raycom Communications Systems Ltd., International House, 963 Wolverhampton, Oldbury, West Midlands B69 4RJ. Tel: 021-552 0073.

Special Event Stations

Trowbridge & District ARC are staging a special event station for three days in July and hope to make 1991 contacts.

Using the callsign **GX2BQY**, the Club's callsign - they hope to also make contact with the West German town of Leer, Trowbridge's Twin Town.

As part of the West Wiltshire '91 Trade & Commerce Exhibition, at Court Mills Centre, Polebarn Road, Trowbridge, members of the public are more than welcome to see the radio station in action on July 11, 12 and 13 both on h.f. and v.h.f.

As well as complementing the exhibition, the club hope that contacts will be sponsored with the money going toward the £50 000 needed to provided a £250 00 dedicated Music Centre in West Wiltshire for young musicians.

A special QSL card will be available via G2BQY.

On July 14, RAF Cardington in Bedfordshire will be celebrating the 50th anniversary of the Air Training Corps with a Special Event station run between the Bedford & District ARC and the 134 Bedford Squadron ATC. The callsign **GB50ATC** will be used on the 3.5 and 7MHz bands.

Pembrokeshire RS will be running a special event station for the Cutty Sark Tall Ships Race, to be held for the first time on the Milford Haven Waterway, Pembrokeshire.

The Cutty Sark Tall Ships race runs from July 9-14, with a proposed sail past of all the entrants on the Haven on July 14, before heading out to sea for the start. They are hoping for some 60 ships to be in the Haven from some 18 countries.

The station will be run from July 1-28 under the callsign **GB2TSR** from a caravan in the lower park of the British Legion, Hamilton Terrace, Milford Haven.

Fastnet DXpedition

Final arrangements have been completed for the first expedition to the Fastnet Rock Lighthouse off the south coast of Ireland in July 1991. The callsign to listen for is EJ7FRL.

The IOTA reference number is EU-121, which results from revisions to the IOTA directory and which applies to the new group, Irish Coastal Islands. The QSL address is EI2BB via the bureau or direct. Weather permitting, the group will land on Fastnet by helicopter on July 9 and will leave on the 19th.

Preferred frequencies are: s.s.b. 1.8, 3.775, 7.075, 14.140, 14.240, 21.275, 28.450, WARC bands and 144.260MHz.

The c.w. frequencies are: 10kHz up on 3.5 and 7MHz, 10 and 30kHz up on 14, 21, 28 as well as 144.040MHz.

Auto-Ranging DMMs

The DT-870 is a battery powered hand-held a.c. and d.c. voltage , current, resistance and continuity meter with both three and three quarters digit numeric

data and a 40-segment bar graph displays. This provides accurate spot measurement and gives a good indication of span and proportional measurements.

Auto-ranging, the DT-870 is small and lightweight, taking up little space in a tool box. However, it offers an additional low power resistance measurement function for in-circuit testing and a data memory for relative readings. A display hold facility is included.

Visible and audio function annunciators warn of over-range, low battery and other status conditions. Measurement maxima are d.c. volts up to 1000V, a.c. volts to 700V, current to 10A and resistance to 3MΩ. The price of the DT-870 is £53.00. **Multitest Ltd., PO Box 4, St Neots, Huntingdon, Cambs PE19 4QX.**

Stolen

A Yaesu FT-980 No. 3E010513 and a Yaesu FT-225RD No. 9H060023 has been stolen from the Bury Radio Club. The equipment was purchased by extremely hard fund raising by the members and has shattered the membership. If you have any information that may help, contact: **Harry Hargreaves, 7 Harwood Walk, Tottington, Bury**.

rallies

* Short Wave Magazine & Practical Wireless in attendance

***June 30**: The 34th Annual Longleat Rally will be held, as usual, at Longleat House, Warminster, Wilts. **Shaun O'Sullivan G8VPG. Tel: (0225) 873098.**

July 7: The York Radio Rally will be held in the Tattersall Building, York Racecourse, Knavesmire, York. Doors open at 11am, entrance fee 50p. There's ample free parking too. Attractions include amateur radio, electronics and computer traders, arts and crafts, Morse Test, a licensed bar and cafe. Talk-in on S22. **Dave G7FGA. Tel: York (0904) 790079.**

July 7: The Newport ARS Junk Sale will be held at the Brynglas Community Centre, Newport. Doors open from 10.30am to 2pm (10am for the disabled. Light refreshments will be available.

July 7: The Kings Lynn ARC will be holding their Great Eastern Rally in the Corn Exchange, Tuesday Market Place. Doors open at 10am. There will be free parking, licensed bar, refreshments, Bring & buy, major national exhibitors. Admission £1.

***July 13** - The Cornish RAC will be holding their rally at Penair School, St Clements, Truro. All the usual attractions, refreshments, free parking, etc. Doors open 10am, 9.30am for the disabled. Talk-in on S22. **Rolf Little Tel: (0872) 72554.**

July 14: The Sussex Amateur Radio & Computer Fair will again be held at Brighton Racecourse. All the usual traders and other attractions will be there. Doors open at 10.30am. **Ron Bray G8VEH. Tel: (0273) 415654** office hours.

July 21: The 8th McMichael Rally & Car Boot Sale will be held at the Haymill Youth & Community Centre, Burnham Lane, Slough. The event starts at 10.30am, admission £1. The car boot sale is £6 per pitch on the day. There is free parking on site and talk-in is available on S22. **Neil G8XYN. Tel: (0628) 25952.**

July 21: The Colchester mobile rally will be held as the Sports & Leisure Centre, Brinkley Lane, Colchester. Easily accessible site with free car parking and an extensive area under cover for traders and radio societies.

July 28: Rugby ATS have their annual Car Boot Sale, venue to be advised nearer the time. The event opens at 10am and talk-in will be provided by GB8CBS on S22. **Kevin G8TWH on (0203) 441590.**

***July 28**: The Scarborough ARS will be holding their annual rally at The Spa, South Foreshore, Scarborough. Doors open at 11am until 4pm. Many trade stands, large Bring & Buy, Tombola, licensed bar and refreshments. Morse tests followed by a demonstration by the North Yorkshire Morse test team. Entrance 50p including a prize draw. **Ian Hunter G4UQP (QTHR). Tel: (0723) 376847.**

***August 11**: Hamfest 91 will be held at the Flight Refuelling Sports & Social Club Grounds, Merley, Wimborne, Dorset. The event opens at 10am and will feature a Bring & Buy, trade stands, radio and electronics car boot sale, craft fair, field displays and attractions for the whole family. Special disabled parking is available in the grounds and overnight camping can be arranged. **John G0API. Tel: (0202) 619649, Rob G6DUN. Tel: (0202) 479038.**

August 11: Derby & District ARS will be holding their 33rd annual rally at Littleover Community School, Rykneld Road, Littleover, Derby. All the usual attractions including the monster junk sale, flea market and refreshments, etc. **Martin Shardlow G3SZJ. Tel: (0332) 556875.**

August 18: The West Manchester Radio Clubs 'Red Rose Rally' will be held at the Bolton Sports & Exhibition Centre, Silverwell Street, Bolton (town centre). All the usual trade stands, societies, Bring & Buy, etc. All at pavement level, with facilities for the disabled. Refreshments available all day and bar. Doors open at 10.30am for disabled and 11am for the general public. Admission £1, children free. **Dave G1IOO on (0204) 24104 evenings only.**

August 25: The Galashiels Club are to hold their open day at Focus Centre, Livingstone Place, Galashiels. All the usual activities will be there - Bring & Buy, traders, club stands, etc. **John Campbell GM0AMB. Tel: (0835) 22686.**

August 26: The Huntingdon Junk Sale will be held at the Medway Centre, Coneygear Road, Huntingdon. Doors open between 1000 and 1600, refreshments will be available all day. **G1YVS. Tel: (0733) 241109 evenings.**

***September 1:** The Telford Amateur Radio Rally will be held at the Telford Exhibition Centre, Telford. Doors open 11am (10.30 for the disabled).

September 1: Preston ARS will be holding their 24th Annual Rally at the University of Lancaster, as in previous years. **Godfrey Lancefield G3DWQ, QTHR. Tel: (0772) 53810.**

***September 8**: The Lincoln Hamfest will be held at the Exhibition Centre, Lincolnshire Showground. Doors open 10.30am (10am for the disabled) until 5.30pm.

September 8: The Vange ARS will be holding their annual rally at the Laindon Community Centre, Laindon High Road, Laindon. Doors open between 10.30am and 4.30pm. Admission 50p. The rally will include many traders, Bring & Buy, Refreshments and a free raffle. Talk-in is on S22. **Mike Musgrave (0268) 543025.**

***September 8**: The Scottish Amateur Radio Convention will be held at The Northern College of Education, Gardyne Road, Dundee. Parking for 1000 cars is available..

***September 15**: The BARTG Rally will be held at Sandown Park in the Surrey Hall. **Peter Nicol G8VXY. Tel: 021-453 2676.**

***September 15**: The Bristol Radio Rally will be held at the Brunel's Great Train Shed, Temple Meads, Bristol. **D S Farr (0272) 839855.**

September 15: The East of England Radio Rally will be held in the ICI Building, The East of England Showground, Oundle Road, Peterborough. Admission is £1, doors open 10.30am (10am for the disabled). There's a Main Traders Hall with bar and catering, a Traders Marquee with Bring & Buy, separate outside area with flea market plus radio and electronic car boot sale. Various other attractions - Which-Kit Car Show, Caravan Club Rally, Banger Racing, Golf Driving Range & Go-Karts, Nene Park & Nene Valley Railway, acres of free parking. **Nigel G1ARV. Tel: (0733) 78685.**

***September 22**: The Centre of England Amateur Radio Rally will be held at the Motorcycle Museum, Bickenhill, near the NEC Birmingham. Doors open 10.30am. Admission £1, OAPs 50p and children free, Concessionary rates to visit the museum, Bring & Buy, Talk-in on S22, ample free car parking, bar and restaurant available. **Frank (0952) 598173.**

***September 28/29**: The RSGB HF Convention will be held at the usual venue, more details later.

September 29: The Harlow & District ARS will be holding their rally at the Harlow Sports Centre. The main hall provides a large and varies selection of traders, both old and new to the event, the studio upstairs will also have some traders along with the Bring & Buy. Entrance. Entrance £1, children under 14 and OAPs half price. **Liz G0MDL. Tel: (0277) 364742 evenings & weekends only.**

September 29: The North Wakefield Radio Club Annual Rally will be held at Outwood Grange School, Wakefield. **Richard Reisch G4GCX. Tel: (0532) 622139.**

More rally details next month.

When you are ready to graduate to real listening

Look to Lowe

The NRD-535. JRC do it again.

JRC have triumphed again with the introduction of their new NRD-535. Latest in the line of NRD receivers, the NRD-535 represents a true step forward in features, performance, and facilities for the dedicated listening enthusiast.

Apart from looking quite stunning in appearance, the NRD-535 is equally impressive in use. The smooth tuning is the first thing you notice and JRC have developed a direct digital synthesiser (DDS) system which tunes in 1Hz steps. This means that you simply cannot tell that you are tuning a synthesised radio except for the fact that the accuracy and stability are of laboratory standard. Whatever the frequency readout says, you can believe; and what's more the readout itself is absolutely brilliant in its clarity. There is of course the front panel keypad for swift frequency setting, so you can browse around with the tuning knob or go direct to frequency if you wish.

All mode reception covers AM, USB, LSB, CW, FM, RTTY, and even FAX, and there are IF filter bandwidths to suit the modes. Using the same range of accessory filters as the NRD-525 means that if you want to trade-up you can keep your existing filters and transfer them to your new 535.

When it comes to winkling out the weak stations from the noise, the NRD-535 excels. Pass band shift is provided so that you can slide the IF filter around the signal so as to eliminate the adjacent interference, whilst a totally new notch system gives tunable rejection with a 40dB notch depth, 10dB better than even the legendary NRD-525. Both of these features are included in the standard spec. but if you want to have full control over IF bandwidth, a Bandwidth Control board is available as an option.

For the keen broadcast DX-er, JRC offer an optional plug-in ECSS board which has to be used to be appreciated. The ability to "lock-on" to an incoming AM signal and then pick off either sideband makes the NRD-535 the only choice for the serious listener.

The serious listener will also be impressed by the 200 memory channels, each of which stores frequency, mode, bandwidth, attenuator setting, and AGC setting (that's what I call comprehensive). The memories can be scanned of course and there are also comprehensive frequency sweep facilities under complete user control.

When it comes to user control, the NRD-535 is almost unique, because there are no less than 16 different functions which can be programmed from the front panel by the user, to "tailor" the receiver to suit their own particular needs. These cover everything from tuning rates to the precise BFO offset on CW, so everyone can have the receiver of his choice.

For the advanced user, the NRD-535 is fitted with computer control facilities, and an RS-232C interface is provided as a standard feature. The user manual contains comprehensive details on the 28 different receiver operations which can be computer controlled. You will need a computer or dumb terminal of course, but given a modicum of computer literacy, there is almost nothing which cannot be done by remote computer control.

All in all the NRD-535 is a truly excellent advance on the 525, and is worthy of carrying the JRC banner forward into the future. When you see that the price is the same as that of the NRD-525, you can only marvel at what JRC have done. See it soon.

NRD-535 HF Receiver	**£1115 inc. VAT**
CMF-78 ECSS option	**£202 inc. VAT**
CMH-530 RTTY option	**£104 inc. VAT**

FREE

Send four first class stamps to cover the postage and we will send you, by return of post, your FREE copy of "THE LISTENERS GUIDE" (2nd edition), a commonsense look at radio listening on the LF, MF and HF bands. Its unique style will, I am sure, result in a "good read" but underneath the humour lies a wealth of experience and expertise. You will also receive detailed leaflets on our range of receivers and a copy of our current price list.

LOWE ELECTRONICS LIMITED

Chesterfield Road, Matlock, Derbyshire DE4 5LE Telephone 0629 580800 (4 lines) Fax 580020

When it comes to scanners Look to Lowe

'SCAN' and 'CONTROL' - Computers and Radio

With an ever-increasing demand from radio amateurs and short wave listeners to interface their computers and radio equipment, Lowe Electronics proudly announce the introduction of their professionally produced software for use with AOR and Kenwood products.

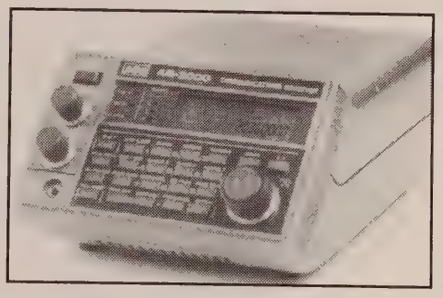
SCAN is a professional grade software package for IBM PCs (or compatibles) for use with the AOR AR-3000. It transforms the monitoring capabilities of this excellent scanning receiver.

SCAN provides 3000 dual VFO memories, each with a 50 character 'comments' field and a variety of operating facilities which greatly ease the task of monitoring over the very broad frequency range of the AR-3000.

The memory channels can be scanned over user-definable ranges and it is possible to switch between VFOs 'on the fly'. Scanning frequency steps are adjustable and you can enter an active frequency into memory with a single key press.

A disk-based listener's log book is provided for entering signal information and Single Frequency Watch is a professional logging facility which calculates statistics for radio activity on a single frequency.

AOR AR-3000



SCAN - £51 Inc VAT (+ £2 p&p)

In brief, here are some of the major features of SCAN:

- Keyboard frequency entry
- Selectable tuning step size
- 3000 commented memory channels
- Memory scanning
- Comprehensive listener's log book
- Optional audible morse ID of mode
- Bar graph S-meter display
- Offset simplex reconstruction
- Dual VFO with VFO tracking
- Programmable and free scanning
- Band plan display
- Pause or Stop on signal
- Single frequency watch
- Optional mouse control
- On-screen help
- Simple installation

CONTROL is a very sophisticated IBM-PC (or compatible) based software package exclusively designed for use with a range of suitable Kenwood transceivers and receivers.

Messages are sent and received through the serial port (RS-232). The PC controls the frequency and mode and maintains a screen display of the radio's settings.

1000 memories in a single bank each with a 50 character comment field are additional to the memory channels programmed into the radio itself. They can be selected manually or automatically and be reviewed without the need to tune the transceiver.

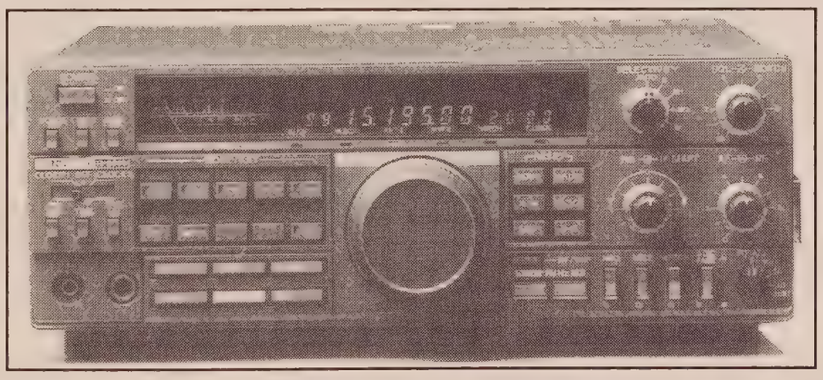
CONTROL provides a range of tuning facilities to match the type of operation or listening being undertaken.

An amateur radio station log book is integrated into the package with many of the details (like date, time, frequency and mode) entered automatically. It has been designed to comply with DTI regulations and to run separately when required.

Major features:

- Keyboard frequency entry
- Tuning using arrow keys
- Selectable tuning step size
- One key mode select
- 1000 commented memory channels
- Manual/auto memory scanning
- Band plan display
- includes LOGBOOK program
- Optional audible Morse ID of mode
- Interface to DATABASE
- Band plan display
- Works with most Kenwood radios
- On-screen help
- Simple installation

Kenwood R-5000



CONTROL - £51 inc VAT (+£2 p&p)

System requirements for SCAN and CONTROL:

IBM PC, XT, AT or compatible running PC/MS-DOS 2.0 or higher, minimum memory of 512K, one serial port (RS-232), minimum of two 360K floppy disk drives. (Hard disk recommended).

It is only possible to offer a flavour of the programs on this page. You need to see them in operation and on the computer screen! So, come and see them; either at Matlock or at any of our radio centres around the country and you will discover an exciting new way of getting even more out of your favourite hobby.

***BOURNEMOUTH** 0202 577760. **BRISTOL** 0272 771770. **CAMBRIDGE** 0223 311230. ***DARLINGTON** 0325 486121.
***GLASGOW** 041-945 2626. **LONDON (EASTCOTE)** 081-429 3256. **LONDON (Heathrow)** 0753 45255.
S. WALES (BARRY) 0446 721304. *Closed all day Monday.

Roberts R808 Digital All-Band World Receiver

The Roberts R808 receiver reviewed here by John Waite is the latest release from this famous British manufacturer.

The R808 from Roberts is a state-of-the-art receiver with all the features you'd expect. Besides coverage of the v.h.f. broadcast band, the R808 has unbroken a.m. coverage from 150kHz through to 30MHz. Added to this are forty-five user memories that can be used to store your favourite frequencies.

Documentation

The R808 was supplied with excellent documentation that comprised a 28-page A5 operating manual, a condensed operating guide and a *Wave Handbook*. The operating manual was one of the best I've seen, with every function very clearly explained. The technique used was a combination of text and step-by-step diagrams. Once the functions had been mastered, the condensed (one A5 sheet) operating instructions were all that were needed for occasional reference. The organisation of the controls and functions were such that the common sense was all that was normally required.

The *Wave Handbook* was a very interesting summary of major short wave broadcasting stations. The book comprised nineteen pages with the stations arranged in order of nationality. For each station there was the address and a typical station identification i.e., "This is London Calling". This was followed by a listing of transmission times, frequencies and language. As the *Wave Handbook* measured only 190 x 110, it slipped very neatly inside the travel case supplied with the R808.

Power

Being a fully portable receiver, the R808 featured a versatile range of power options. The standard, and probably most used, was to fit four AA cells in the main battery compartment. To provide battery back-up for the memories and clock functions, another two AA cells were required. The link-up between the main and back-up batteries was very well thought out to minimise the risk of memory loss when changing batteries. The simple rule was to make sure that at least one power source was OK all the time.

For those that prefer to use an external power source there was a standard power jack on the side panel. By purchasing optional adaptors the R808 could be powered by any standard a.c. power source. There was also an adaptor to suit vehicle 12V supplies that may prove very handy for those with caravans.

The R808 is supplied with internal antennas to cover its full frequency range. Medium and long wave bands used an internal ferrite rod antenna while the other bands relied on a 930mm telescopic antenna. Although this was fine for general use, the serious short wave listener

Specification

Frequency	150kHz - 29.999MHz
Range	87.5MHz - 108MHz
Antennas	Long/medium wave ferrite rod v.h.f. and short wave telescopic whip
Audio Output	440mW at 10% thd
Power Sources	4 x AA cells 2 x AA cells (back-up) External 6V at 300mA
Dimensions	196 x 125 x 36mm
Weight	600g

would want to use an external antenna. This facility was provided by a 3.5mm external antenna jack. Inserting a plug in this jack automatically disconnected the telescopic antenna. Associated with this jack was a Local/DX switch that could be used to attenuate very strong signals.

Versatile Tuning

A great advantages of microprocessor control is the comprehensive tuning facilities that can be provided. The R808 has a conventional rotary tuning control on the side panel. However, by using an adjacent slide switch the tuning rate can be altered between two pre-set levels. One provides a normal tuning rate, while a second position gives a rapid tuning rate that's useful for rapid changes of frequency. A third position on the switch disabled the rotary control. This was useful for avoiding knocking the receiver off tune.

A second method of frequency selection was to use the direct entry keypad. This was great for tuning directly to a particular station. As with most other entry systems, the R808 automatically inserted trailing zeros.

The third selection method was to use the short wave band selection. With this system you could jump straight to the start of any of the thirteen broadcast bands. This was perhaps the best method of moving around the bands.

When searching around for a station a scanning option can be extremely useful. The R808 included facilities for both manual and automatic scanning. The scanning was controlled by two large buttons on the front panel. These were marked with arrows to show the scan direction. Pressing either of these buttons changed the frequency in single steps according to the band selected. The steps used were 100kHz for v.h.f., 9 or 10kHz for medium and long wave and 5kHz for short wave. The option of 9 or 10kHz for medium wave could be set via a small slider on the side panel. If a finer scan rate is required, setting the tuning rate switch to SLOW changed the steps to 50kHz on v.h.f. and 1kHz on all other bands.

To engage the automatic scan you simply had to press either of the scan buttons for half a second or more. Once the scan had started it continued until a signal was found that exceeded the preset threshold. Once the scan reached the band edge it looped back to the beginning again.

User Memories

With the powerful search facilities of the R808 it's important to have a method of storing and retrieving useful frequencies. The R808 handles this with a total of 45 memories that are called presets. These are organised as nine each for long medium and v.h.f. and eighteen for the shortwave bands. The presets were extremely easy to use both for storage and retrieval. As mentioned earlier, frequencies stored in the presets were retained during battery changes by the back-up batteries.

Good Audio

The use of a comparatively large (77mm) internal speaker resulted in a surprisingly pleasant sound quality. This could be adjusted over a small range by use of a two position tone control. There was also the option to change the a.m. bandwidth from narrow to wide. The wide position produced the best audio but, the narrow position was required to cope with crowded bands.

For private listening the R808 was supplied with a set of very light-weight stereo headphones. Although reception via the speaker was obviously in mono only the R808 did include a stereo decoder for use on v.h.f. This was enabled by a small switch on the side panel so allowing stereo reception via the headphone jack.

Easy To Use

I spent some time playing with the R808 and getting to know its strengths and weaknesses. As part of this exercise I carried out a few tests to see how the R808 compared with the opposition. The sensitivity tests revealed very good performance with a best result of 1.4µV at 7.26MHz and a worst of 2.5µV at 25.6MHz. These sensitivities were e.m.f./2 for 12dB SINAD. The next area to be checked was the audio distortion and this produced similarly good results. The a.m. distortion was 0.75% while f.m. achieved 0.3%.

These measured results were backed-up by my results on-air. The designers of the R808 seemed to have hit a very good compromise between the conflicting demands of selectivity and sound quality.

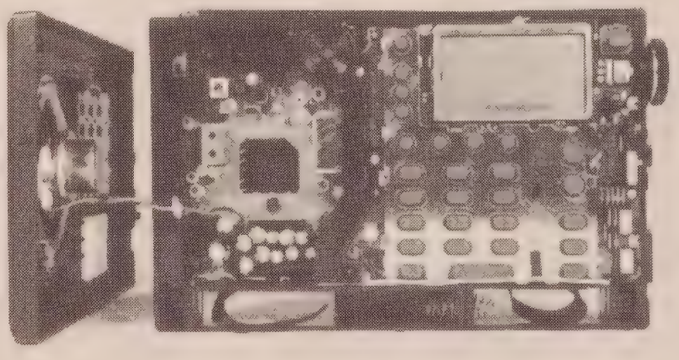
The tuning options were extremely easy to use making it very quick and easy to move around the bands. The only problem I encountered was with the rotary tuning control. Like most digital receivers, the R808 tuned in steps rather than continuously. Instead of just smoothly stepping from one step to the next the output was suppressed between each step. This meant that anything other than very gentle turning of the control resulted in silence. This effect was most noticeable when casually tuning around.

On the plus side, the automatic scanning was one of the best I've come across. The threshold for stopping the scan seemed spot-on with very few stops due to noise or interference.

One added bonus was the inclusion of clock and timer functions. This meant that the R808 could be used as a travel alarm clock with the option to wake up to either a tone or music. The clock could also be set to run with two time zones, switching between the two by the press of a button. ■

Summary

I found the R808 to be a very able receiver with a host of useful features. The general finish and operational features were well chosen - presenting a very up-market image. The performance was also well up to the standard you would expect from this manufacturer.
The overall result is a fine receiver which at £112.75 and the power supply at an extra £15.30, represents excellent value for money. The Roberts R808 can be obtained from any Roberts stockist and my thanks are due to Roberts for the loan of the review model. For details of your nearest stockist, contact:
Roberts Radio Co. Ltd.,
Molesey Avenue,
West Molesey,
Surrey KT8 0RL.
Tel: 081-979 7474.



The inner view of the R808 showing the neat layout and professional finish.

Continuing Along the Right Lines - Part 3

The receivers built in the last series were all tuned-radio-frequency receivers. These are receivers where the radio frequency signals are tuned, converted into an audio signal (detected) and then made louder (amplified). This is the simplest form of radio reception and in the early days of radio it was the only form of radio receiver used. George Dobbs G3RJV explains the theory.

The block diagram in Fig. 3.1(a) shows such a t.r.f. receiver. The radio frequency signals from the antenna are tuned and pass to the detector where they are converted into an audio signal. This audio signal may then be amplified for a comfortable listening level. All t.r.f. receivers have certain endemic problems, especially if they are to be used for short wave reception.

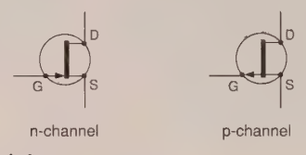
A good short wave receiver requires selectivity and sensitivity. It must be able to select individual stations in a crowded band and must be sensitive enough to pick up weak stations. The simple receiver of Fig. 3.1(a) will probably have only one tuned circuit to select the required signal from other adjacent signals. Its sensitivity will depend upon the antenna used and the amount of audio amplification added. Further audio amplification is only of limited value because if the signal has not been detected, it cannot be amplified and audio amplifiers can produce internal receiver noise which may mask weak signals.

You will find that t.r.f. receivers can be used as

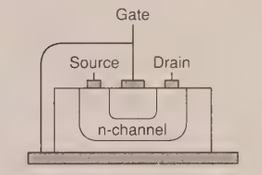
The Field Effect Transistor

The Field Effect Transistor (f.e.t.) is a very versatile semiconductor device. The circuit symbol in (a) shows the two types of f.e.t. - The *n*-channel f.e.t. and the *p*-channel f.e.t. The commonest type in use is the *n*-channel f.e.t.

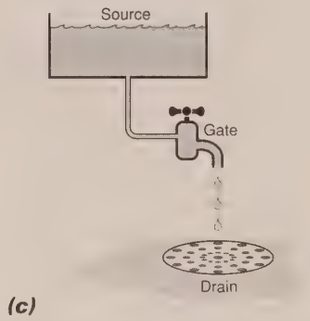
The structure of an *n*-channel f.e.t. can be seen in (b). Technically, this type of f.e.t. is called a j-f.e.t. (junction f.e.t.) A junction f.e.t. consists of a central strip of *n* or *p* type silicon. Two electrodes, the source and the drain are connected to each end of the channel.



(a)



(b)



(c)

The operation of the f.e.t. is more akin to that of a triode valve than a bipolar transistor. A bipolar transistor impedes current flow until it is turned on by a small base current. The f.e.t. allows current to flow. A small voltage applied to the base reduces the flow of current through the f.e.t. Whereas bipolar transistors are current amplifiers the f.e.t. is primarily a voltage amplifier.

The operation can be represented graphically by the drawing in (c). It represents a header tank full of water flowing to a tap which, when opened, allows water into the drain. A small action on the tap (gate) restricts the flow of the water. A small voltage applied to the gate of an f.e.t. impedes the flow of current through the f.e.t. Hence a small voltage change at the gate can produce a large voltage change at the drain.

A great advantage of the f.e.t. is that the gate-channel resistance of the device is extremely high (millions of ohms). This means that the f.e.t. has very little effect on the circuit or the external components connected to the gate apart from the desired voltage gain effect. Conventional f.e.t.s operate at much lower currents than bi-polar transistors, adding to their usefulness in some types of circuit.

The f.e.t. is a very useful device in many electronic circuit applications.

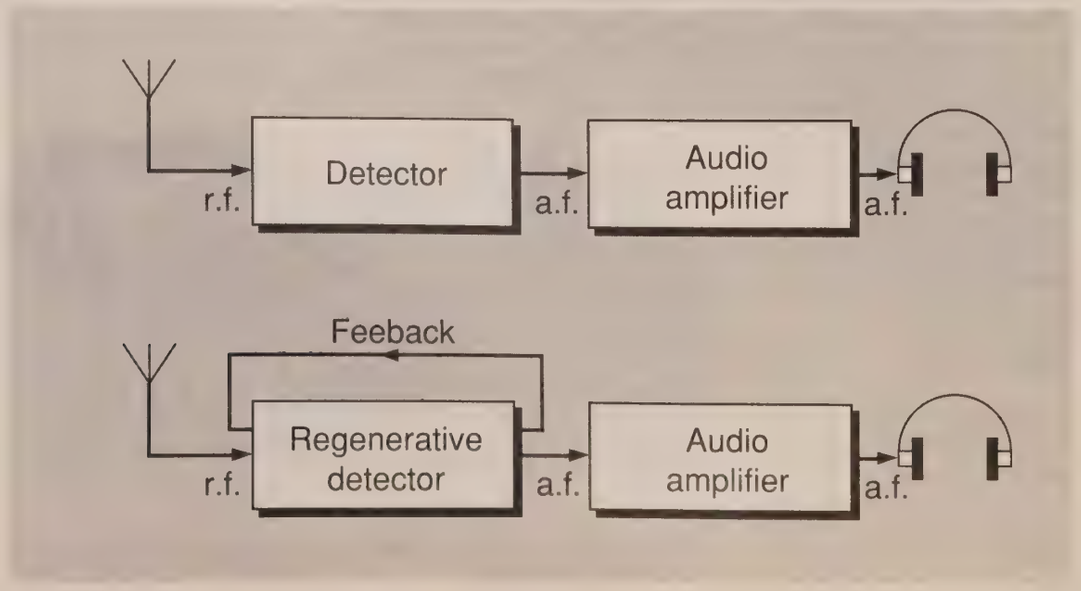


Fig. 3.1.(a): Block diagram of a tuned radio frequency (t.r.f.) receiver.

Fig. 3.1.(b): Block diagram of a regenerative t.r.f. receiver.

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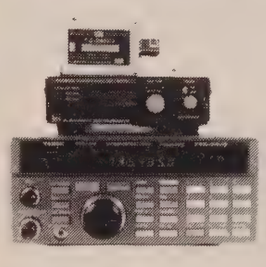

The **FRG9600**, a premium scanning receiver covering 60-905MHz, SSB, CW, AM & FM modes. 99 memories. 5, 10, 12.5, 25 & 100kHz scanning steps. Keyboard frequency entry. Optional convertors to extend range from 0.15-30MHz and 800-1300MHz.

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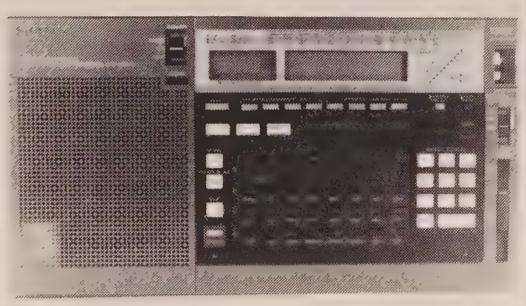


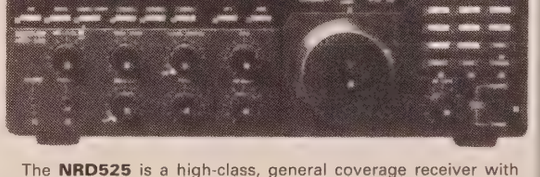
The **ICFSW7600** is a sophisticated portable receiver that combines power and flexibility with one-touch convenience. Freq. range AM 150-29995kHz and FM 76-108MHz.

The **ICFPRO80** is a hand held professional receiver with air band capability and an 8-way tuning system. Frequency coverage 150kHz-108MHz and 115.15kHz to 223MHz with FRQ 80 frequency convertor.

The **ICFSW1E** is possibly the world's smallest shortwave radio, fully featured with a multiple tuning system and PLL synthesised circuitry for digital precision. AM 0.15-30MHz & FM 76-108MHz.

The **Air 7** is an all purpose handheld multiband receiver with continuous waveband coverage including air band and utilising a 6-way tuning system AM 150-2194kHz. FM 76-108MHz, Air 108-136MHz and PSB 144-174MHz.

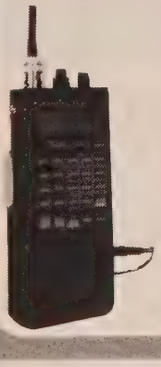
The ultimate Multiband receiver, the **ICF2001D** combines sophisticated shortwave technology with the ease and versatility of both digital and analogue tuning. Freq. range AM 0.15-30MHz, FM 76-108MHz and AIR 116-136.6MHz.



The **NRD525** is a high-class, general coverage receiver with expandability looking to the future. combining traditional technology unique to JRC with the most advanced digital technology gives superb performance whilst remaining extremely easy to use. The NRD525 covers 90kHz-34MHz and with an optional VHF/UHF converter also covers 34-60, 114-174 and 423-456MHz. Modes of operation CW, SSB (USB/LSB), AM, FM and RTTY with optional demodulator.

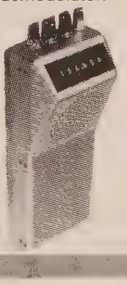
The compact **HX850E** is a basic scanner with a few memories. Ideally, suitable for a novice in the scanner market. AM/FM modes and a frequency coverage of 60-89, 118-136, 140-174 and 406-495MHz.

The **HP200E MkII** is a 1000 channel, programmable, handheld scanner. AM, FM and FM wide for commercial channels covering 500kHz-600MHz and 805-1300MHz. Supplied complete with NiCad charger, Antennas, DC cable, shoulder strap, outclip, carry case and earpiece.



The **Bearcat 200XLT** is the cream of the Bearcat handheld scanner range. With 200 memory channels and simple operation these are proving very popular. Freq. coverage 66-88, 118-174, 406-512 and 806-956MHz.

The **AIR HANDY** is a compact thumbwheel controlled handheld receiver. Light in weight and easy to use makes it an ideal introduction to receive. The AIR handy covers 118-136MHz and is AM.



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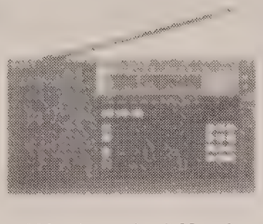

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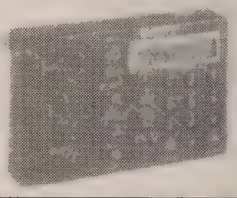

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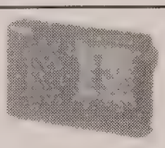

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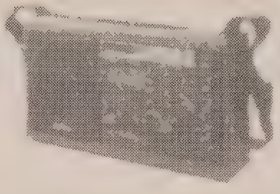

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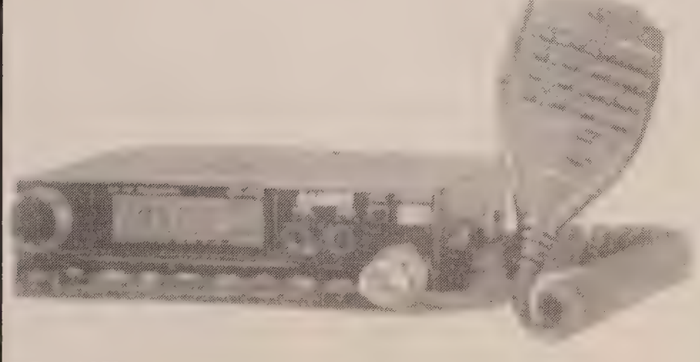

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effective short wave receivers by employing regenerative detection. Such receivers are sometimes called Regenerative Receivers. A simple block diagram of a regenerative t.r.f. receiver is shown in Fig. 3.1(b). The diagram is identical to Fig. 3.1(a), with the exception of a feedback loop added to the detector stage. This is a method by which some of the signal coming from the detector stage is taken and fed back into the input of the detector. This does two things, it increases the gain of the detector and increases the selectivity of the input tuned circuit.

Increased Sensitivity

In a simple detector stage, the output is out-of-phase with the input signal and if it were to be taken back to the input, it would cancel out some of the input signal and thereby reduce the gain of the detector stage. In the regenerative detector, we arrange for the signal to be 'in-phase' with the input and thus add to the input signal. So, part of the signal will be amplified again, producing considerable gain in the detector. This will increase the sensitivity of the receiver.

The detector stage is a 'tuned stage', having the input tuned circuit that selects the signals from the antenna. The feedback signal will have passed through this tuned circuit before it is fed back to the input. So, not only will the feedback increase the gain of the detector stage but this gain will be at the tuned frequency. The gain will be high at the station frequency and much lower at frequencies on either side. Thus the regenerative detector also improves the selectivity of the receiver.

The usual way to provide the feedback is to add a winding to the input tuned circuit. This winding couples between the output of the detector stage and the input tuned circuit. The winding can be arranged to be in the opposite direction to the main tuned winding, the result being that the out-of-phase signal from the output is reversed and fed in-phase to the input.

Self-oscillation

The major problem with positive feedback (in-phase feedback) is that it can cause self-oscillation. If too much feedback is provided, the signal will continue to go round and around the detector stage producing an unpleasant howling. Readers may know the effect of feedback between a microphone and loudspeaker in a public address system. Too much gain in the amplifier causes signal from the loudspeaker to return to the microphone and produce a loud howl.

In the regenerative detector a feedback control, also called the regeneration control, is provided. This controls the amount of the signal fed back to the input. The careful use of this control is vital to the successful operation of a regenerative receiver. Just enough feedback gives good gain and selectivity, too much produces a loud howl. We are going to build a short wave regenerative receiver over the next few months. For what it contains, it can produce amazing results but the user has to learn how to operate the receiver. It will be like the early days of short wave radio, simple equipment linked to operator skill will give the results! ■

IN THE NEXT INSTALMENT GEORGE CONTINUES THE STORY.

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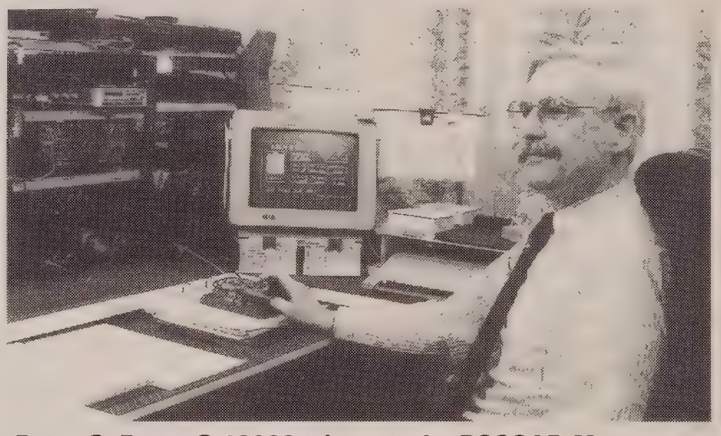
The BOSCAD Morse Master v1.0

Morse Code has always been one of those things that you either learn fairly easily and enjoy using, or a hated subject that has to be undertaken in order to obtain your Class A Licence. Peter G. Rayer G-13038 spent twelve months as a trainee telegraphist and really struggled to get his operating speeds up to 22w.p.m. After a long break he had to start all over again.



Peter G. Rayer G-13038 tries out the BOSCAD Morse Master.

After trying several shareware programs for the IBM compatible, I was asked to try the Morse Master disk on my Atari 520stfm. The first thing to strike you is the well laid out menu, which is user friendly and very easy to use.

From the main menu you select all your options as follows:

You can choose to receive individual groups of letters, the whole code, or your own text files.

You then select the duration time of the lesson, (minimum 1 minute up to 20 minutes maximum), followed by the number of words and characters per minutes, (minimum 6w.p.m. up to 35w.p.m.).

Your next option is, do you want to have the letters and symbols displayed? If you are a complete novice, you can have each character sent twice to help you learn their sounds. I found this very helpful when trying to improve my speed beyond 25w.p.m. (My brain seems to scramble beyond this speed!).

One big advantage of this tutor is that you can set a seed value number, e.g. seed value 123. This means that you can replay the same characters over and over again, then change the number when wanting to change the character combination, etc. This is extremely useful when you want to go back and check your progress at a later date.

A new screen appears when you are ready to commence the lesson. You can then adjust the volume level and the signal's frequency to a comfortable level.

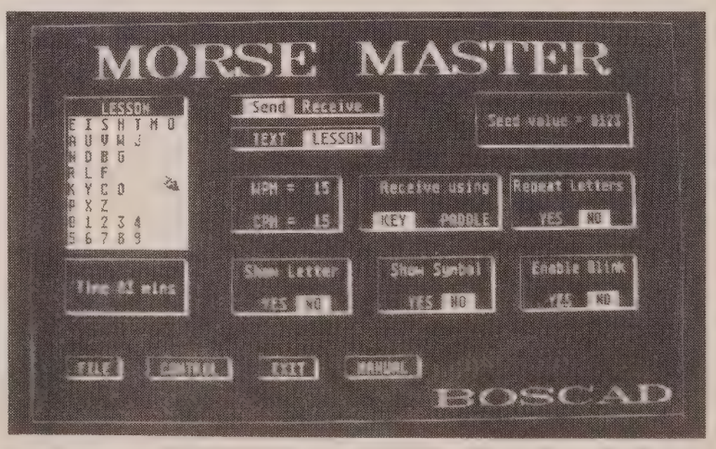
If you want to receive the tutorial under 'live' conditions, you can introduce both noise and c.w. drift over the top of the tutor's signal, including QRM from an adjacent RTTY station. This all helps to make reception more realistic.

Having commenced a tutorial period, you can pause, either to display the characters or text sent so far, or take a break, (this is especially useful if you have a telephone like mine, that only rings when you are busy).

Once the basic code is mastered, you can enter small text files of your own into the program, including punctuation and other characters not required for the Morse examination, but used in everyday transmissions. This is a very useful addition to the package, as some tutors do not prepare you for receiving transmissions complete with commas, full stops, oblique strokes, etc.

The Morse Master also allows you to send Morse to you computer, using either a paddle or straight key. The package contains a lead that connects your key to the computer, via the printer port. What you send in 'perfectly proportioned' code is displayed on the screen, there is also a timer so that you can check your progress.

There are several other features to be discovered within this program including a very comprehensive on-screen manual and help file, plus same good basic advice on how to start learning the Morse code.



This is the Morse Master main screen. You can use this to set up the computer. The click boxes at the bottom move you to another screen.

Conclusions

I found the Morse Master a fascinating, well graded and easy to use tutor, several visitors to my shack felt that they could improve their Morse by using this method, and I think that it is good value at £29.99.

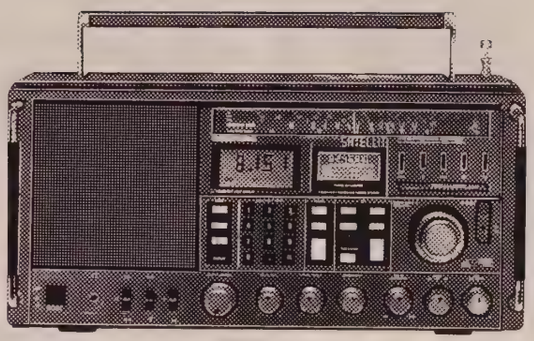
However, like most computerised programs, you are required to send 'perfectly balanced Morse' to the computer, and it does not allow for any error of timing. (Although this does encourage you to perfect your rhythm and timing).

I also feel that this program would benefit from having the most commonly used punctuation added as a character group that can be selected on the main menu. As a knowledge of the punctuation characters is just as important to the s.w.l. or operator as the alphabet itself.

Further information can be obtained from the supplier: **BOSCAD Ltd., 16 Aytoun Grove, Baldridgeburn, Dunfermline, Fife KY12 9TA. Tel: (0383) 729584** (evenings only).

Please note that I am informed by GM6JHH, one of the people behind this program, that it is purely the lack of time, that prevents him from using the Morse Master, to pass his Morse test! ■

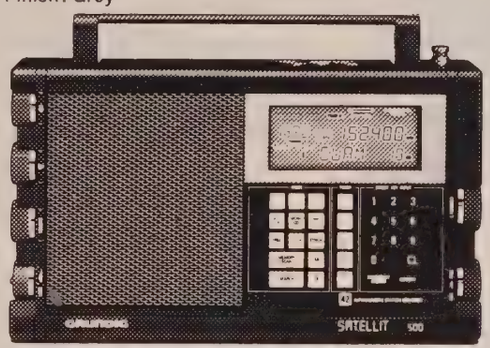
WORLD CLASS SHORTWAVE RECEIVERS



SATELLIT 650

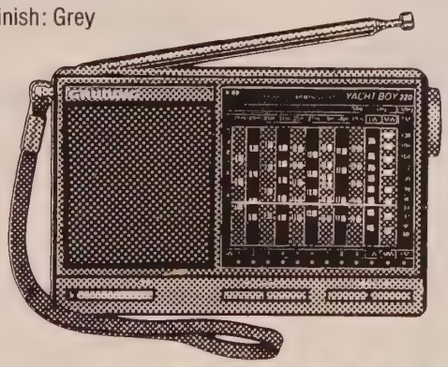
The famous stalwart of the Grundig shortwave range, the Satellit 650 professional radio, is now discontinued. As a replacement is not envisaged, buy one now while stocks are still available.

- 4 Wavebands FM, MW, LW, SW
- SW coverage (1.6 to 30 MHz)
- Station memory store of up to 60 stations
- Microprocessor controlled PLL frequency synthesizer for all wavebands
- 30 Watts peak power (on mains)
- Finish: Grey



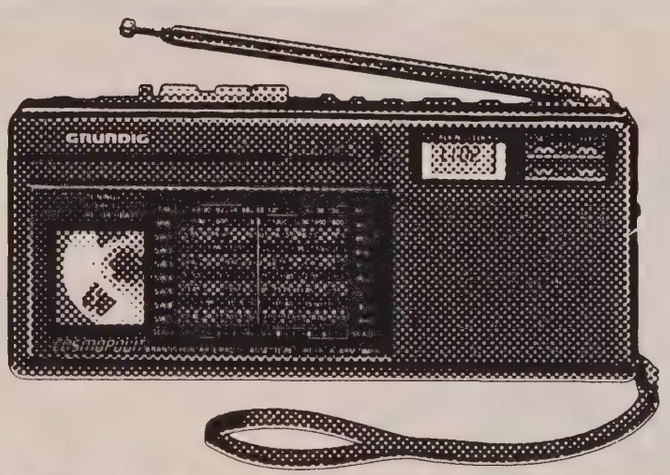
SATELLIT 500

- 4 Wavebands FM, MW, LW, SW (coverage 1.6 to 30 MHz)
- Station memory store of up to 42 stations
- Built-in 24 hour clock timer
- Illuminated multifunction display for alphanumeric digits
- FM stereo operation via additional external speaker
- Finish: Grey



YACHT BOY 220

- MW, LW, FM and 9 x SW wavebands
- Electronic band selector and volume control
- Automatic frequency control
- Headphone socket
- Soft carrying case



COSMOPOLIT

This versatile and compact cassette radio is ideal for the ardent traveller. It is packed with features including 7 short wave bands plus MW and FM, LCD talking clock with alarm facility. You can wake up with cassette, alarm or radio. The cassette will play in stereo through headphones (supplied) or through the built-in speaker. You can also record using the integrated microphone or connect an external microphone into the socket provided. The Cosmopolit can be operated by battery or mains and includes a neat soft carry case.

- Multi-band stereo radio cassette
- MW, FM, 7 x SW band
- LCD talking clock
- Timer facility
- Alarm by radio/cassette/dynamic buzzer
- Snooze facility
- Tuning/stereo/battery indicator
- Cassette counter
- OTR – One Touch Record
- Tone Control
- Built-in condenser microphone
- Headphones
- Soft carrying case
- Mains Adaptor Optional

YACHT BOY 230

- FM, MW, LW, 13 x SW wavebands
- Electronic band selector and volume control
- World map with 43 cities with Universal Time Clock (UTC) and date line
- Dual alarm function by radio or buzzer
- Snooze, sleep facility
- City/time zone scanning
- Multi-function LC display

FOR YOUR NEAREST GRUNDIG DEALER RING 0788 545828

GRUNDIG

QUALITY GERMAN ENGINEERING

NEVADA LARGEST

FANTASTIC DEALS ON—

YUPITERU

We are pleased to announce our appointment as UK distributors for this comprehensive range. Working direct with Yupiteru enables us to reduce prices and introduce new models for the UK! All models have full service back-up – naturally!

VT 125 UK AIRBAND RECEIVER

A new and powerful pocket size air band radio that leaves the competition standing. Covers all the new UK airband frequency allocations.

- Covers 108-142 MHz
- 30 direct entry memories
- Search, scan and keyboard operation
- Search steps 25,,50, 100 kHz
- Very sensitive receiver
- Pass and delay functions
- Supplied with UK charger

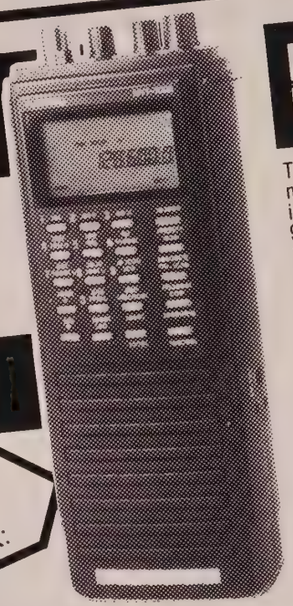
£179

MVT 7000 HANDHELD

8-1300 MHz continuous coverage – multi-mode. AM/FM/WFM. 200 channel memory – very sensitive S meter.

£289

NEW! NOW IN STOCK:



MVT 5000 HANDHELD

This handheld has received many rave reviews. We found it particularly sensitive at 900 MHz. Features include 100 mem. channels coverage (25-550 MHz, 800-1300 MHz). Supplied complete with all accessories and full 1 year guarantee. Price includes express delivery.

£249

MVT 6000

Base/mobile version of the MVT 5000 handheld. Supplied with all accessories. Includes express delivery.

£299

THIS MONTH FREE WITH PSU 101 BASE STAND/CHARGER WORTH **£29.50**

FAIRMATE

As the UK distributor for Fairmate we are constantly working with them to update and produce new features and models.

NEVADA MS1000

The worlds first 1,000 channel mobile scanning receiver.
Modes:– AM/FM/WFM.
Freq Range: – 500kHz-600 MHz, 805 MHz-1300 MHz

NEW FEATURES

- Switchable Audio Squelch
- Tape Recorder Output Socket
- Auto Signal Operated Tape Recorder Switching
- All metal case for improved EMC compatibility.

All this and more for just £279

*Includes Free Discone ANT worth £24

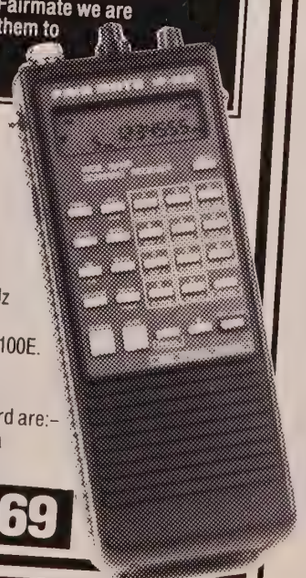
FAIRMATE HP200

NEW CONTINUOUS COVERAGE VERSION

Freq Range:– 500 kHz – 1300 MHz
Models:– AM/FM/WFM
An improved version of the HP100E. The new HP200 has superior performance and stability.
Accessories included as standard are:–

- VHF Antenna ■ UHF Antenna
- UK Spec.
- DC charger/adaptor
- Earphone
- Carrying case

£269



SCANNING ANTENNAS

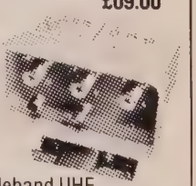
Nevada WB 1300 discone (25-1300 MHz) Stainless steel top of the range 'N' type connector	£49.95
CTE Micro Scan (180-1300 MHz). New low cost ground plane	£12.00
CTE Sky Band (25-1300 MHz). Stainless steel Discone	£24.00
Nevada Mobile Antenna (50-1300 MHz). Magnetic Mount	£27.90

DIAMOND D707 ACTIVE ANTENNA

(500 kHz-1500 MHz)
A superb base antenna with 20 dB pre-amp. Approx 3.5 ft fibreglass with mounting kit £99.00
D505 Mobile version £69.00

MASTHEAD ANTENNA SWITCH

For Scanning enthusiasts select 2 antennas at the masthead remotely from one cable.
Frequency: DC to 1.3 GHz
Connectors N Type £49.95



LOW LOSS JAPANESE COAX

Essential for optimum performance with wideband UHF scanners. We have directly imported this cable which has exceptional low loss and is good for frequencies up to 3 GHz. Loss at 1 GHz for 10 mtrs is 1.3 dB

MODEL 8D (11.1 mm) £1.40 per MTR
MODEL 5D (8.1 mm) £0.56 per MTR

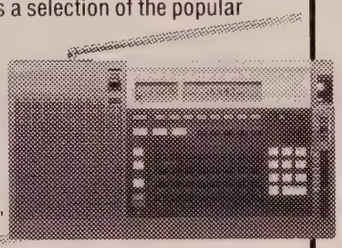
ASA DIGITAL AIRBAND RADIO

This new low cost receiver is designed for aviation enthusiasts featuring a digital display for accurate reception and tuning. Coverage 85-108 MHz FM, 118-136 MHz AM, 162-165 MHz weather, 520 kHz-1.6 MHz £59.95

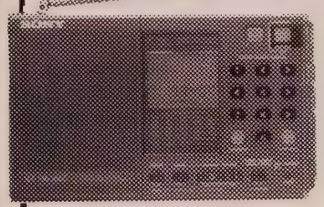
STOCKS-BETTER VALUE

SONY® RADIOS

We stock the complete range of Sony shortwave products – Here is a selection of the popular models.



IFC 2001D
Full coverage shortwave, VHF and airband radio. (150 kHz-136 MHz) Receives AM, FM, SSB. **£299**



SW 7600
A new pocket shortwave radio covering:-
150kHz-30MHz AM/SSB
76kHz-108MHz FM
£149

ICF SWIE Pocket SW plus VHF radio **£149**
AIR 7 Very sensitive airband H/Held radio **£229**
PRO 80 Short wave/VHF H/Held radio **£299**
AN 1 An external active antenna with built-in pre-amp covers. (150kHz-30MHz) **£49.99**

Call John Gordon our Sony specialist for more details of these or any other models of interest.

ICOM

We are ICOM specialists and carry the complete range in stock including these NEW models:-

IC-R1 The new miniature wideband handheld scanner that covers 150 kHz to 1300 MHz with 100 memories and many features **£369**

IC-R100 Mobile or base extra wideband scanning receiver covering 500 kHz to 1.8 GHz with 100 memory channels and reception of AM, FM, WFM. **£499**

IC-R72 A new HF communications receiver covering 100 kHz to 30 MHz. Receivers SSB/AM/CW with FM board as optional extra 99 memory channels and 10dB pre-amp fitted as standard **£645**

IC-R7000 ICOMS Most popular communications receiver. Covers 25 MHz to 2 GHz with 99 memories and all mode reception. **£925**

Call Paul our ICOM specialist for details of other ICOM amateur radio products we stock – or for details of the latest models and prices.

AOR SCANNERS

AR 3000 wideband scanner 100 kHz to 2036 MHz with no gaps!
Now available
£765

BEARCAT 50 XLT

A popular low cost handheld scanner with 10 memories covering 10 bands from 66-512 MHz (with gaps). Ideal for marine band and UHF. **£99**

The 100 XLT and 200 XLT handhelds feature removeable battery packs for easy charging – and have proved popular because they are simple to operate giving excellent performance and reliability.
SPARE BATTERY PACK **£29.95**

BEARCAT 760 XLT

New Model with 900MHz Coverage.
With 100 memory channels and coverage of the UHF band, the 760 XLT is ideal at home or in the car. Pre-programming of preset bands is possible for fast access. Freq. Coverage 66-68, 136-174, 406-512 MHz **£235**

BEARCAT UBC 175 XLT

(16 CH. Memories) An economical base scanner covering all the popular aircraft, marine and public service bands.
Coverage 66-88, 118-174, 406-512 MHz **£169.99**

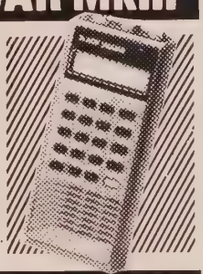
BEARCAT UBC 200 XLT

HANDHELD Top of the range handheld easy to use and very sensitive. Features 200 memory channels, ideal for civil airband, marine, pmr and 900 MHz. UHF band.
Coverage 66-88, 118-174, 406-512, 806-956 MHz **£229**

UNIVERSAL SCANNER BASE UNIT PSU101 MkIII

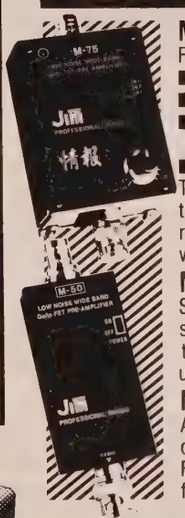
NEW VERSION A mains operated unit which will both charge and power the handheld scanner. Complete with convenient desktop stand for use at home.
Suitable for the following models:-
Fairmate HP100E, 200E, AOR 1000, ICOM 1C-R1, MVT 5000, MVT 7000, Uniden BC 50XL, Uniden BC 55XL, Uniden BC 70XLT, Realistic PRO 38, Uniden 200 XLT, Uniden 100 XLT. **£29.50**

BLACK JAGUAR MkIII



Features include 16 channel memories, selectable AM/FM and the facility to power the set from the mains/car using one of the many accessories now available. Covers civil and military airbands plus lots more! Frequencies: 28-30, 50-88 MHz, 200-280 MHz, 360-520 MHz **£199**

LOW NOISE PRE-AMP



MODEL M75
For base and handheld scanners.
- 25-2100 MHz
- Low noise GaAs FET
- Selectable filters for improved performance
- Variable Gain Control **£69.95**

These new Pre-Amplifiers are a must for the scanner enthusiast and will allow reception of signals that were inaudible without them.

MODEL M100
Same spec as M75 but with full RF switching, may be used with transceivers on transmit up to 5 watt o/p power **£79.95**

MODEL M50
A new low cost pre-amp without filters or gain control. Offers low noise GaAs FET at 20 dB fixed gain. **£49.95**

COMMUNICATIONS RECEIVERS

Lowe HF225 (30kHz-30MHz)	Kenwood R2000 (150kHz-30MHz) 10 memories	Kenwood R5000 (100kHz-30MHz) 100 memories
£429	**£595**	**£875**

BOOKS

Short Wave Confidential Freq list	£8.95
VHF/UHF Frequency Guide	£5.95
Marine Frequency Guide	£4.95
VHF/UHF Airband Guide	£3.50
Comprehensive Airband Guide	£5.99
Scanners II by P Rouse	£7.95
Scanners 3rd Edition	£8.95
Flight Routings Guide 1991	£4.95

THE TRADING POST

We have a large selection of used equipment which is constantly changing. Here is a selection – but call to check availability before ordering.

RECEIVERS AND TRANCEIVERS

Sony 2001. Shortwave Portable RX.inc FM	195.00
Lowe HF225 RX with FM board & active ant	375.00
Sony AIR 7. Airband + FM.C/with case	175.00
Bearcat DX-1000 boxed C/with all manuals	325.00
Yaesu FRDX400. Immaculate Cond. Reliable.	215.00
Yaesu FRG9600. 60-905MHz. All mode. boxed.	375.00
Yaesu FRG7700. Shortwave. Digital Display.	425.00
Kenwood TS430S. Fitted filters + FM.	575.00
Panasonic DR49. Shortwave & FM. As new.	275.00
Atlas 210.C/with Ext VFO. Ideal starter.	325.00
Icom R7000. All band receiver.	750.00
Kenwood TS930S.HF Tranceiver. Boxed in good cond.	1095.00
Standard C5608D Twinband Mobile.	525.00
Kenpro 25W. 2M mobile. Boxed as new.	195.00
★★★Yaesu 290's 560's 2700 dualbanders + Many More★★★	

SCANNERS

SX200 Base AM/FM. 16 Mems. Old but reliable	125.00
Bearcat 145XL. Base 16 Mems. Good Buy..!	70.00
Yupiteru MVT6000. Base. Boxed.	199.00
Realistic PRO31. H/Held. 10 Mems. Boxed.	99.00
Yupiteru MVT5000. H/Held. Up to 1300MHz.	195.00
Bearcat 200XLT. 200 Mems. C/with 900MHz.	169.00
Realistic PRO38 H/Held. Aveg. cond.	70.00
AOR 2002. 20 Mems. Base scanner.	345.00
BJ200 Black Jaguar H/Held. AM/FM.	125.00

We are the largest distributors of scanning receivers in the U.K.

NEVADA COMMUNICATIONS

189 London Road, North End, Portsmouth PO2 9AE

HOTLINE 0705 662145 FAX 0705 690626

FAST MAIL ORDER
All orders received before 4p despatched same day.

WORLDWIDE
We ship Worldwide

USE YOUR CREDIT CARD for same day despa

What's Around For The PC

The PC has become very popular amongst radio enthusiasts recently. The biggest problem is finding out who does what for the machine, how much does it cost and where you get it from. These are some of the questions we hope to answer, as well as providing readers of SWM with a project to keep them busy over the winter months! But if you're not interested in computers, don't worry we're not turning your favourite magazine into a computer publication, this is a one-off special.

❑ Siskin Electronics have PCs aimed at the radio enthusiast as well plenty of high quality Public Domain and Shareware software. Machine prices start at £599 plus VAT and any purchases mentioning *Short Wave Magazine* will receive a copy of Don Bradbury's *A Guide to Personal Computing* free of charge! Alternatively, the book is available for £3.95 and is an ideal guide for those just starting to get to grips with the PC world of computing.

Catalogues are available from: **Siskin Electronics Ltd., 2 South Street, Hythe, Southampton SO4 6EB. Tel: (0703) 207155**.

❑ The program being shown in our front cover shot is one of a range from Comar Electronics. They have five different packages for the PC:

PC HF FAX - a facsimile demodulator - £99

PS SWL - RTTY and Morse demodulator - £99

PC COMM - Facsimile, RTTY and Morse demodulator - £178

PC GOES - Satellite and FAX demodulator - £199

PC DATACOM - Radio interference - £198

Demonstration disks are available for PC HF FAX and PC GOES at £5.00, please state disk size when ordering.

For full details of the various programs, contact: **Comar Electronics, 109 Moorgreen Road, Cowes, Isle of Wight PO31 7LF. Tel: (0983) 200308**.

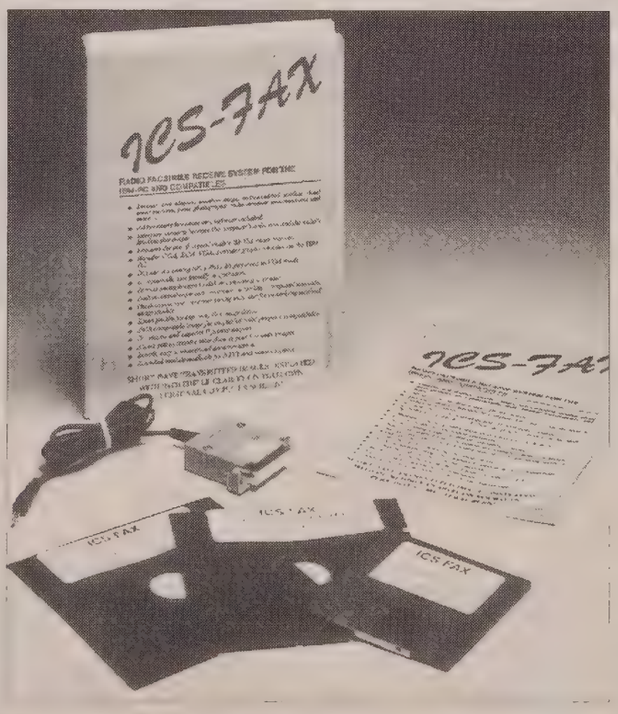
❑ Another source for components and complete machines is Broadberry Data Systems. They sell mother boards, memory and various add-ons. **Broadberry Data Systems, 1 & 3 The Gate Centre, Syon Gate Way, The Great West Road, Brentford, Middlesex TW8 9DD. Tel: 081-568 6834**. Please enclose an s.a.e.

❑ BMKMULTY is a multi-mode amateur radio software package with up to six modules: AMTOR, c.w. FAX, RTTY, SSTV and an audio analyser/panoramic tuning display.

BMKMULTY requires an IBM PC or 100% compatible computer (such as the Amstrad 1512/1640/2086 etc.) running the MS-DOS operating system, version 2.1 or higher. The SSTV and FAX modules require CGA, EGA or VGA graphics. A single RS232 port is required. AMTOR, RTTY and c.w. require a terminal unit, such as the MULTYTERN available from The British Amateur Radio Teledata Group.

FAX, SSTV and the TUNER modules require a simple audio interface between the radio and the computer. The MULTYTERN fulfils this requirement as well as handling AMTOR, RTTY and c.w. Alternatively, Grosvenor Software can supply a ready-built audio interface unit at £9.50 complete with leads.

BMKMULTY - all six modules costs £80, AMTOR only - £30, RTTY only - £20, AMTOR + RTTY - £40, c.w. - £20, AMTOR + RTTY + c.w. - £50, FAX - £20, SSTV £10 extra or £15 on its own, TUNER as an extra £10. All UK and Europe post and packing is £1, elsewhere £3. For further details, please send an s.a.e. to: **Grosvenor Software (G4BMK), 2 Beacon Close, Seaford, East Sussex BN25 2JZ. Tel: (0323) 893378**.



❑ ICS Electronics have been in the business of connecting computers to radios for almost ten years now and as you would expect have a large array of products on offer. These range from a Weather FAX Receive System (as reviewed in March '91 SWM) to a Weather Satellite Receiver, the MET-2. They also sell a large number of non-computer related products.

If you would like a detailed catalogue, contact: **ICS Electronics Ltd., Unit V, Rudford Industrial Estate, Ford, Arundel, West Sussex BN18 0BD. Tel: (0903) 731101**.

❑ Trident Systems can supply a variety of items, either Mail Order or at one of the radio rallies they attend. All items sold carry a 3 month warranty unless sold as untested, these goods will be replaced if found defective within three days. They can supply terminals, mother boards, printers, monitors, disk drives, display cards and software to mention just a few of the items.

Telephone for latest prices.

Trident Systems, PO Box 1408, Slough, Berks SL3 8TN. Tel: (0753) 48785.

What's Around For The PC

❑ G4NRY Control Program. The prime aim of this program is to increase the capability of the Icom IC-735. Features include, control of v.f.o., control of mode, control of memory, control of scan, transverter mode, choice of baud rate. The interface is supplied for connection to a computer RS232 serial port (25-pin DIN).

The scan control, for example, scans up or down with any step rate and change the direction whilst scanning. Scan memories or between any two consecutive memories, the latter at any step size. The scanning speed may also be selected.

The current price for the program is £50 and includes free post and packing (3.5 or 5.25in disks). Contact: **Ivor Mantell, 24 Bourne Avenue, Fazeley, Tamworth, Staffs B78 3TB**. Programs now exist for other Icom rigs.

The ICS MET-2 is an s.h.f. weather satellite receiver which can be used with a PC and the relevant software to receive WXSAT pictures.

❑ Controlling your radio using a computer is growing ever more popular these days. Barrie Jenkins is marketing PC-MONITOR for controlling the Yaesu FRG-8800 and FRG-9600 (£50), SCAN for the AR-3000 (£50), CONTROL for Kenwood radios (£50) as well as LOGBOOK (£25), TERMINAL which is host-made terminal software for the PK-232 (£40), DATABASE with h.f. broadcast station, WEFAX and standard frequencies (£15) and PC-FILE 5.0 a database (£5).

For full details of what these programs can achieve, send an s.a.e. to: **B.J. Jenkins, 32 Marsh Crescent, High Halstow, Kent ME3 8TJ**.

❑ One of the most popular places to obtain Public Domain software is from the PDSL, Public Domain And Shareware Library. Their catalogue lists over 2000 disks on just about every subject possible, from radio to food and games to the stock market! The catalogue is priced at £2 with disks ranging between £2.35 and £4.50 each for non-members, depending on quantity and £2.20 and £3.75 for members. For more details, contact: **Public Domain And Shareware Library, Winscombe House, Beacon Road, Crowborough, Sussex TN6 1UL. Tel: (0892) 663298**.

❑ SCANCAT is an American program we discovered at the Dayton HamVention this year. It supports the TS-440 and R-500, the FT-757 and FRG-9600 as well as the AR-3000 radios. Just a few of the features with the program are: you can enter one frequency and increment up-down from that point, scan between two frequencies in any increment, scan a file of frequencies and create your own pre-set frequency bands.

For details, contact: **J&J Enterprises, 4001 Parkway Drive,, Bossier City, LA 71111, USA. Tel: 318-631-30821**.

❑ WHATS-UP allows you to capture, decode, display and extract for analysis telemetry from DOVE, OSCAR 17 and FUJI-OSCAR 20. It also allows you to process captured telemetry from the late FUJI-OSCAR 12. A packet TNC with an RS-232 interface is required for real-time data capture.

PC-HAM v.5.32 is a set of programs for use by amateur radio enthusiasts. You can display/print your QSOs sorted by callsign, search for and display all QSOs with a specified prefix, generate your DXCC status automatically and much more.

This company specialise in PC Shareware and Public Domain Software, they charge £1.50 for 5.25in discs and £2.00 for 3.5in disks, these prices include post and packing. If you require their full catalogue-on-a-disk, with over 700 software items, contact: **CMB Shareware, 7 Rookhope Grove, Bishop Auckland DL14 0SW. Tel: (0388) 662875**.

❑ Another company with a wide range or peripherals is Panrix Electronics. Their products range from mother boards, floppy drives and memory boards to tape streamers and complete systems. Contact: **Panrix Electronics, 93 Kentmere Approach, Leeds LS14 1JW. Tel: (0532) 650214** for more details.

❑ If you're going to 'have a go' at building your own PC, another company who supply you with bits is Digitask. They've been in the build your own market place now for 7 years. For a full list of the equipment available, contact: **Digitask Business Systems Ltd, Unit 2, Gatwick Metro Centre, Balcombe Road, Horley, Surrey RH6 9GA. Tel: (0293) 776688**.

❑ If you are the proud owner of either a Kenwood (£51) or an AOR radio (£51), Lowe Electronics have software for controlling your receivers. For more details on what these programs can do, see their advert on page 9, or contact, **Lowe Electronics Ltd., Chesterfield Road, Matlock, Derbyshire DE4 5LE. Tel: (0629) 580800**.

❑ British Amateur Radio Teledata Group are the only national group dealing with all modes of amateur data transmission and can give advice and assistance with both hardware and software for most computers including the PC. They have a few specific products for the PC, PC-RTTY version 2 (£9.95 inc P&P for 5.25in or £12 inc P&P for 3.5in disk), BMKMULTY, MULTYTERM terminal unit (£47).

Software is available from: **John Barber, 32 Wellbrook Street, Tiverton, Devon EX16 5JW. Tel: (0884) 259166**. Terminal units and p.c.b.s are available from: **Ted Hatch G3ISD, 147 Borden Lane, Sittingbourne, Kent ME10 1BY**.

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20 Programmable channels + full search + Scan (Factory Refurbished)
Frequency Coverage:

BAND: 118-136MHz (Aircraft)
MODE: AM
REC.
INCREMENT: 12.5kHz

BAND: 138-174MHz (VHF High)
MODE: FM
REC.
INCREMENT: 5kHz

BAND: 406-490MHz (UHF)
MODE: FM
REC.
INCREMENT: 12.5kHz

BAND: 490-512MHz (UHF "T")
MODE: FM
REC.
INCREMENT: 12.5kHz

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Short Wave ATU will improve your shortwave antenna .....**£39.95** + £3.00 P&P
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AR300 XL Aerial Rotator and control. Max Load: 100lb.....**£39.95** + £2.95
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Manufacturers and distributors of communications equipment
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Trade enquiries welcome. Contact Stuart or Graham

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Model Desk 1300

Built and designed for use with scanners. Coverage: 25 to 1300MHz Total height - 36ins - 9ins at widest point. Comes complete with 4 metres of RG58 coax cable and BNC connector fitted. Ideal indoor - high performance antenna and can also be used as a car antenna when your car is static. REMEMBER YOUR SCANNER IS ONLY AS GOOD AS YOUR ANTENNA SYSTEM!

£49.00 + £3.00 p&p.

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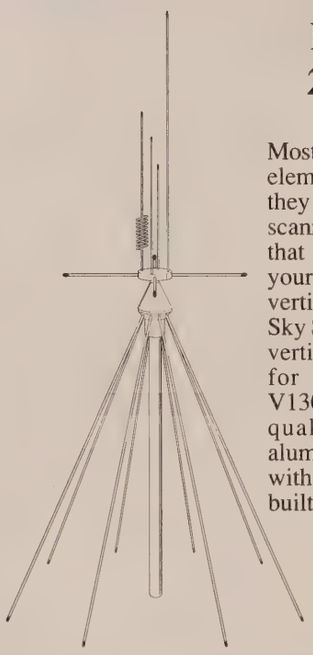
DX-DISCONE
25 to 1300MHz



Most discones only have horizontal elements and this is the reason that they are not ideal for use with a scanner. Most of the transmissions that you are likely to receive on your scanner are transmitted from vertically polarised antennas. The Sky Scan V1300 discone has both vertical and horizontal elements for maximum reception. The V1300 is constructed from best quality stainless steel and aluminium and comes complete with mounting pole. Designed and built for use with scanners.

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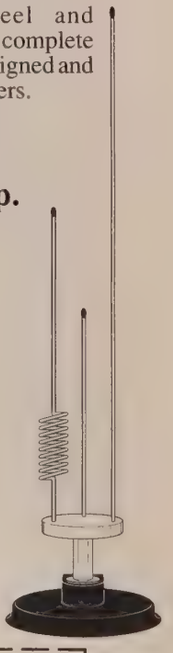
For improved performance, wide band reception, 25 to 1300MHz. Comes complete with protective rubber base, 4m RG.58 coax cable and BNC connector.
Built and designed for use with scanners.



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+ £3.00 p&p.

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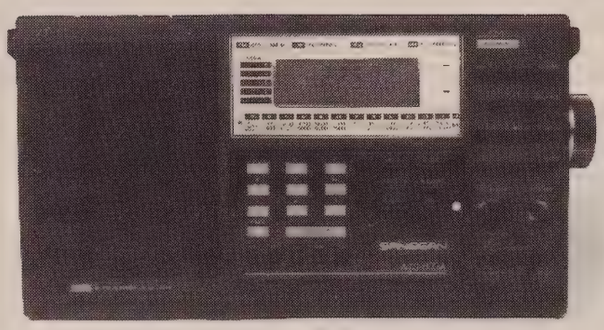
SANGEAN ATS 803A

(Direct Key-in World Receiver with Quartz Alarm Clock Timer)



£99.95 + £5 check, test and P&P.

SPECIFICATIONS & FEATURES

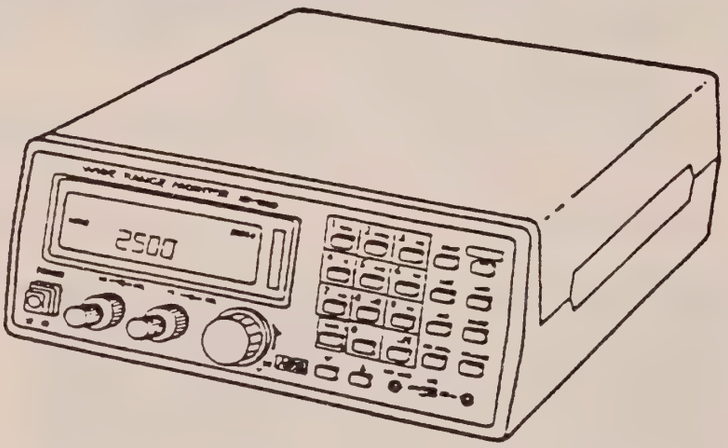
★ 150-29.999 continuous tuning with no gaps. Phase locked loop-double conversion Superheterodyne ★ Full Shortwave/AM/SSB 150-29999kHz No Gaps! + FM 87.5 - 108 Mono/Stereo ★ Five Tuning Functions: Direct Press Button Frequency Input Auto Scanning, Manual Scanning Memory Recall and Manual Tuing Knob ★ Built-in Clock and Alarm. Radio turns on automatically at preset time and frequency. ★ Large digital frequency display. ★ Fourteen Memories - Nine memory channels for your favourite station frequencies. Last setting of mode and waveband stored in 5 memories. ★ Direct press-button Access to all 12 Shortwave broadcast bands. ★ Two power sources - battery or AC mains adaptor. ★ General coverage of all a.m. bands in LW/MW/SW (Dedicated Broadcast Band Coverage on all versions) Plus of course the f.m. band for quality sound broadcasts in headphone stereo. ★ SLEEP Function turns the radio on or off after an adjustable time of 10-90 minutes. ★ Separate BASS and TREBLE controls for maximum listening pleasure. ★ External antenna jack for better reception. ★ Adjustable r.f. GAIN control to prevent overloading when listening close to other strong stations or if there is interferenc. ★ New improved wide/narrow filter (6/2.7kHz) ★ b.f.o. control (Beat Frequency Oscillator) enables reception of SSB/USB/LSB (single side band) and c.w. (Morse Code) transmissions. ★ Illuminated display to facilitate night-time use. ★ Designed for both portable and Desk Top use. ★ Five dot LED Signal Strength Indicator.
DIMENSIONS: 29.2cm x 16.0cm (11.5in x 6.3in x 2.36in)
OUTPUT: 1200mW (10% THD) WEIGHT: 1.7kg (3.75lbs) Without batteries.
Wide/Narrow Filter Switch.

TRADE ENQUIRIES WELCOME.

★ NEW ★ NEW ★ NEW ★ NEW ★

The AOR AR-2500

- ★ 2016 Channels. 100kHz to 1500MHz.
- ★ AM, FM, WFM & BFO for SSB, CW.
- ★ 64 Scan Banks.
- ★ 16 Search Banks.
- ★ RS232 Port Built in. £419.00
- ★ Continuous Coverage.



The AR2515 was an AR2002 fitted with a "Whizzo" microprocessor, this same software has now been incorporated into the NEW AR2500 but at a considerably reduced price.The AR2500 boasts nearly 2000 memory channels (1984 to be exact) in 62 banks of 32 plus 12 search banks, modes of a.m., n.f.m. & b.f.o. along with increment steps of 5, 12.5 & 25kHz. Frequency coverage is from 100kHz to 1500MHz, an added feature is a BFO for the reception of s.s.b. signals.

CALL IN FOR A DEMONSTRATION. WE ARE JUST 5 MINUTES FROM JUNCTION 4 ON THE M5.

The AOR AR-1000

The AR-1000 comes complete with the following equipment:

- ★ Set of 600mA/H NiCad batteries.
- ★ 240V Mains Charger.
- ★ DC power cord with cigar lighter plus soft carrying case.
- ★ Belt clip.
- ★ Carrying strap.
- ★ Earpiece.
- ★ High performance DA900 flexible gain antenna.

Frequency Range: 500kHz-600MHz.
805MHz-1300MHz.

£249.00

VT125 AIRBAND RECEIVER

A small but sensitive airband radio that is set to take off in the UK!

* Covers 108-142MHz .
* 30 Memory Channels.
* Priority Monitoring.
* Pass and Delay Functions.
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NEW MVT 7000 HANDHELD

8-1300MHz continuous coverage - multi-mode. AM/FM/WFM. 200 Channel memory - very sensitive. S meter. **£289.00**

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The MET-2 is a revolutionary new system capable of bringing real time, professional standard weather satellite images to IBM-PC computer users. Updated images of Europe are sent every half hour, 24 hours per day. This permits you to accurately forecast local weather conditions.

The MET-2 sets new standards of price and performance. It gives results comparable to systems costing many times more, producing true 800 x 600 x 64 grey level or 256 colour graphics on an IBM-PC equipped with a suitable VGA monitor. Most similar systems are only capable of supporting only 16 grey levels at a lower resolution.

The standard system includes:-

• 3 metre long Yagi antenna • High gain, low noise pre-amplifier • 20 metres of cable • A receiver/ demodulator • Mains power supply • Software • IBM-PC interface card.

Options include: A 20 metre extension cable • A matching NOAA (low earth orbiting satellite) receiver.

Both the European Meteosat and American GOES geostationary satellites may be received. The following types of images are available via Meteosat:-

Images of the whole of Europe every 30 minutes (infra-red) • Four visible light close ups of Europe every hour during daylight • Pictures of the Atlantic, Middle East and Africa at less frequent intervals • Infra-red pictures of North, South and Central America from GOES-E re-transmitted by Meteosat • Whole earth pictures 16 times per day.

Using the animation software provided with the MET-2, these images can be received automatically and animated to reveal cloud movements, variations in temperature, vegetation changes etc. False colours can be generated in order to enhance detail in clouds, land or sea.

From the UK, the antenna should be pointed due south at an elevation of about 30 degrees. Low antenna height is not a problem, provided the view to the south is clear.

Send for further details and pictures of received images.

MET-2: £822.44 inc. VAT. P + P £10.00

ICS Electronics Ltd. Unit V, Rudford Industrial Estate, Arundel, West Sussex BN18 0BD
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SysRq

System Request

AT 286 Personal Computer

12 MHz CPU, 1Mb RAM, 1.2Mb Floppy Disk Drive, 40Mb IDE Hard Drive, Serial and Parallel Ports, Keyboard, 14" VGA Paper White Monitor and MS-DOS 4.01a

Complete System . . . . £699 + VAT

A full range of upgrade options is also available.

The above price excludes delivery. All machines are subject to availability and are supplied with a 12 month Return to Vendor Warranty. E&OE.

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DAYTON '92

DAYTON - just that one word is enough to excite radio enthusiasts everywhere because the annual HamVention held there every April is the world's biggest gathering of radio amateurs, listeners and dealers - and now you can be a part of it.

We have just completed out first readers' trip to Dayton and just a few of their comments show how successful it was....

"Thank you for organising what I can only describe as the most enjoyable and the greatest experience in amateur radio that I am every likely to have. The trip to Dayton was great (being the first time I have ever flown) but to arrive at the show and see so many people sharing the same hobby is something that will stay with me for many years to come". Brian G0LCJ

"Many thanks to all concerned for laying on the trip which was superb in all respects! I would welcome a return visit." van G3IZD

"Thank you for making it possible for me to go to Dayton.... I had a great time and thoroughly enjoyed myself. Next time I'll take more cash for the flea market." Wally G3ENB

We are now planning next year's visit which will be the last weekend in April 1992. We aim to arrive on the preceding Wednesday evening to allow a day for sightseeing or shopping at one of the enormous malls. The Salem Mall has more than 100 shops and 22 eating places and the Dayton Mall has about 140 shops, 8 cinemas, 25 eating places and parking for 7000 Cars!

On Friday, the main show opens at midday, but it's worth going earlier because the flea market will be open from 6am. There will be more than 1000 stalls there, quite a few of which change each day. When the arena opens there will be at least another 700 stands to see. All the major brand names will be represented, as will some we never see in this country. There will also be a large selection of computer equipments - about 30% of this year's show was devoted to hardware and software (some PD at $1 a disk!). A useful service was provided this year by Marconi Instruments. They had test benches available inside the building where they provided power, a service monitor, a dummy load and a wattmeter for buyers to check-out their purchases.

The prices will amaze you - not just in the show. New and used equipment can be bought for 'silly money', but then so can almost everything else. A good breakfast will cost you a few dollars and the most we spent on an evening meal was $18 (for THREE of us) at an 'all you can eat' diner. Clothing (good shirts $12, very good shirts $20 at Wal-Mart), shoes, alcohol, tobacco (King Edward cigars ar 20 cents each!), the list is almost endless. Take an empty suitcase!

Hiring a car is usually essential anywhere in America, but for this event the Town Council lay on free buses to and from the show, hotels, malls and tourist attractions such as the world famous aircraft museum. In the evening our hotel, the Radisson Inn, will provide mini-buses for groups who want to go further than walking distance.

Wives and girlfriends, if they're not interested in radio, can also go to one of the Alternate Activities. This year there were 35 talks and craft classes - Wheat Weaving, Glass Etching, Shrink Art, Counted Cross Stitch and so on. What about Mouse Wall Decoration. One of our party thought it was how to decorate your mouse's wall, another suggested it might be a demonstration of 'ragging' (patterning a freshly painted wall by rolling a rag across it) but using a mouse instead. It turned out to be how to make a mouse-shaped wall decoration described in the brochure as 'just a spoon-ful of clever cuteness"!

If you think you may be interested in next year's trip, just fill in the coupon now and send it (free) to Roger Hall at the address below. You will be sent more details as they become available. As the HamVention organisers have changed the way in which hotel bookings are handled we have a limited number of rooms so please register your interest early. The cost will probably be £500-600 but send no money now. If you decide to go you will be asked for a deposit nearer the time. We also hope to be able to offer complete holidays to include an extended stay for you to go where you please or a further two weeks in Florida or California.

This year almost 34 000 people passed through the doors on **each** day of the show. Next year you could be one of them.

I am interested in the Dayton '92 Trip. Please put me on your mailing list and send me further details as they become available.

Name .....

Address .....

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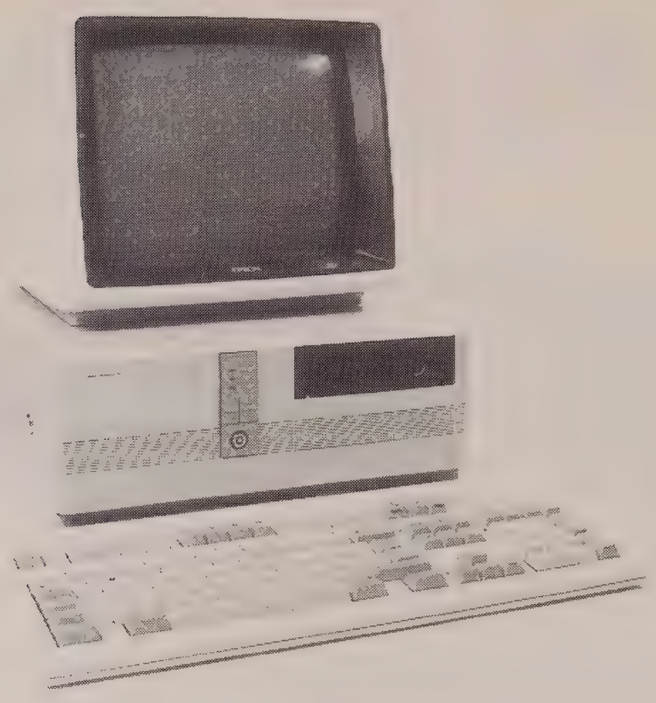
Tel: .....

Send to: Roger Hall, PW Publishing Ltd., FREEPOST, Enefco House, The Quay, Poole, Dorset BH15 1PP.

Build Your PC



The home-built, 'minimum system' XT with one 5.25in, 360Kb floppy disk drive fitted.

It all started at a radio rally just before Christmas. I saw an XT motherboard, with memory, lurking in a black bag on a club stand. By the end of the day I had succumbed and parted with a ten pound note, intending to acquire the other bits and pieces during the coming year by similar means, thus building a working PC XT for peanuts. Or so I thought!

Having got the motherboard home I needed to test it. Reading through the plethora of magazines devoted to the PC, my mind was stunned by the variety of bits and pieces available. One advert caught my attention and from it I ordered a copy of *PC-DIY*, which claimed to explain all about the mysteries of making and upgrading a PC. I then managed to borrow a monochrome display card and a green screen monitor. Things were starting to move! The book arrived, together with a catalogue listing, amongst other things, a variety of cases and as the company concerned was only a short drive away, I decided to go and see them for myself before choosing. The cheapest case, fitted with a 200W power supply seemed to be just what was needed, so more money was parted with and back I went to start the assembly. This turned out to be very simple indeed and within a short space of time my minimum system was sitting on the bench ready to be switched on.

All PCs Are Not The Same

This was when I discovered that all PCs are the same - except that some are less so than others! Trying to sort out all the problems without any technical information is enough to drive anyone round the bend. Although the system worked, it didn't work quite as I thought it was supposed to. Deciding where the problems lay turned out to be very time consuming, as well as frustrating.

A telephone call to Roy Bunce, of Blackmore Electronics in Blandford, ascertained that Blackmore would be willing to lend me one of their XT Turbo motherboards together with a video card to put into the case which I had already bought from them. Out of the three versions of XT motherboard that Blackmore sell, I picked the one with a built-in floppy disk controller, running a V20 m.p.u. at a 12MHz clock rate, as representing the best value for money. Unfortunately, they have now discontinued this board so the only option available now is the straight XT Turbo board and you will need a plug-in floppy controller card. The minimum size of RAM you can get away with is probably 512Kb, but 1Mb is much better if you can afford it.

As I only wanted to drive a monochrome display I used Blackmore's Super Dual Display Adaptor card. This runs either CGA or Hercules and auto-switches between modes. It also provides a parallel printer port. An XT clock card was quickly added as I soon got cheesed off with having to enter the date and time whenever the machine was booted up! Obviously, a keyboard is needed and Blackmore do a very nice Cherry one, switchable for either XT or AT machines.

Cases

The case has a flip-top lid, which I felt would make access to the 'works' that much easier and faster than the other types. From past experience of similar projects I know that it is often necessary to delve into the insides to sort out problems. However, for use alongside radio equipment this type of case is more prone to problems as the lid certainly does not provide a good r.f. seal to stop the rubbish generated by the computer escaping. Roy Bunce reckoned that a case with a good r.f. performance would cost a small fortune but that the mini

Building a PC from scratch is straightforward and can be a rewarding project. Dick Ganderton built an XT with the idea that it would allow him to get into WXSATs and FAX.

Listen to AOR

In the last decade AOR has gained a reputation for unique high performance wide band radio receivers world-wide. With the arrival of its new subsiduary AOR (UK) Ltd, UK customers may enjoy a much closer link with the factory.

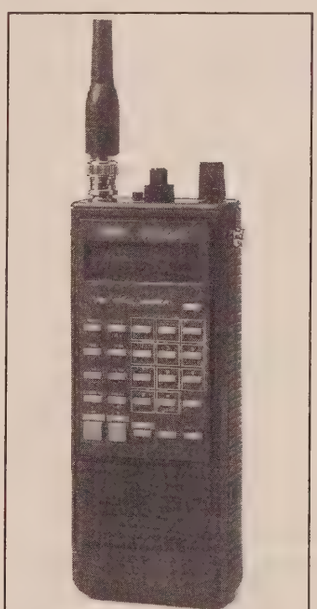
AR3000 The AR3000 now extends your listening horizons further than anyone believed was possible. Covering the entire frequency spectrum from 100kHz to 2036MHz without any gaps in the range, the AR3000 brings the general coverage receiver to a new level of performance and versatility. Not only will the AR3000 cover this extremely wide range, it will allow listening on any mode: USB, LSB, CW, AM, FM (narrow) FM (wide). Tuning rates are selectable from an ultra-fine 50Hz step for SSB and CW, right up to 100kHz steps for the TV bands and Band-2. A slight pull on the spring-loaded rotary tuning control will increase the tuning speed by a factor of ten for really fast tuning. 400 memory channels are provided arranged in 4 banks x 100 channels. Each memory channel will retain mode, frequency and RF attenuator setting. 15 band pass filters are used before the GaAsFet RF amplifiers, this ensures high sensitivity throughout the entire range with outstanding dynamic range and freedom from intermodulation effects. An RS232 port is provided to enable remote operation by plugging directly into most personal computers. The AR3000 is supplied with a telescopic whip aerial, 13.8V DC lead, AC power supply and operating manual. **R.R.P. £765**

ACEPAC3 Multi-function IBM-PC compatible software for the AR3000. (No interface is required) **R.R.P. £119**

(AR2500)

AR2500 and AR2800 The *NEW* base - mobile scanning receivers featuring coverage from shortwave to microwaves. ALL mode operation AM, FM (narrow), FM (wide) and built-in BFO for USB, LSB and CW. Massive memory storage backed up permanently with an EEPROM so no battery is required. Operation is from a nominal 13.8V DC supply (AC adaptor supplied). SSB is used by many services especially on shortwave (including Amateur band and oceanic airband) to extend the operational coverage of their transceivers. It's inclusion on these receivers isn't just an added bonus but a positive asset. The BFO allows selection of either side-band and the fine shift control ensures the very best audio quality. The ***choice*** between the AR2500 and AR2800 is difficult. Although both models look similar on the outside (being housed in a strong plastic cabinet), their design concept is radically different inside the cabinet. The **AR2500** was conceived in the USA where listeners desire massive memory capacity (*Elephant memory*) and fast '*turbo speed*' search and scan. There are 1984 memories (62 banks x 32 ch) and 16 search banks. Even an RS232 port is provided for computer connection. The AR2500 covers 500kHz to 1500MHz with no gaps. The **AR2800's** strong point is superior SSB/CW receive performance and versatility, Amateur band CW reception is of a crisp and clean tone. A conventional memory channel and search bank layout is employed in much the same way as the well proven AR1000. There are 1000 memories and 10 search banks. The AR2800 covers 500kHz to 600MHz and 800MHz to 1300MHz. **R.R.P. AR2500 £419, AR2800 £395**

(AR2800)



(Photograph shown AR1000)

AR2000 The *NEW* AR2000 must be the ultimate portable monitor receiver. AOR have followed on from the successful AR1000 and have made the specification of the AR2000 even better. Frequency coverage of the AR2000 is now continuous (with no gaps) and not in two ranges as with the earlier AR1000. The receiver has also been designed to cover short-wave and has an improved performance in this area. One major change is the replacement of the 154.825 MHz crystal with a highly-stable 12.8 MHz reference and multiplyer chain. The result is an improved frequency stability with a further reduction in unwanted products especially in the VHF marine band. Frequency coverage is 500KHz to 1300MHz. Mode are AM, FM (narrow) and FM (wide). There are 1000 memories and 10 search banks. The receiver is powered from 4 x AA NiCads (supplied) or external DC. The AR2000 is supplied with a wide band whip aerial, AC charger, NiCads, 12V DC lead, soft case and belt hook. **R.R.P. £259**

DA3000 Wide band 16 element discone aerial for external mounting. Frequency range 25MHz to 2000MHz (2GHz). The aerial is supplied with approx 15m of coax terminated in a BNC connector ready to plug in and use with any AOR receiver. 'V' bolts and clamps are provided, however an additional supporting pole will be required for installation. **R.R.P. £69**

Prices include VAT, carriage extra.

Please send S.S.A.E. (17p) for detailed leaflets and full price list - thank you.

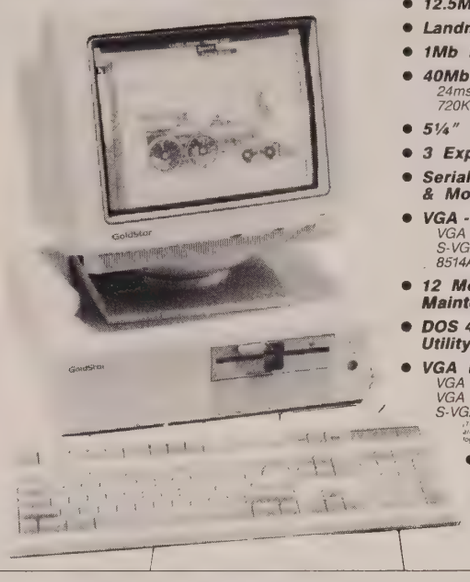
AOR™ AOR (UK) Ltd.
Room 2, Adam Bede High Tech Centre,
Derby Road, Wirksworth, Derbys. DE4 4BG.
Tel: 0629 - 825926 Fax: 0629 - 825927

E&OE

GoldStar
PC-AT COMPATIBLE GT212

Also available with 3.5" 1.44Mb Floppy (at no extra charge!)

We present the Goldstar GT212. Using the very latest technology, Goldstar have developed one of the most fully featured 80286 computers. A world beating VGA PC-AT at a price of only £599+VAT. This price includes a fast 40Mb Hard Disk Drive and 12 months on-site maintenance!



- **12.5MHz 286**
- **Landmark 17MHz**
- **1Mb RAM (4Mb max)**
- **40Mb IDE Hard Disk**
  24ms Access Time
  720K/sec Transfer Rate
- **5¼" 1.2Mb Floppy Drive**
- **3 Expansion Slots**
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- **VGA - Supports 3 Standards**
  VGA ..... 640 x 480 ..... 31.5MHz
  S-VGA ... 800 x 600 .... 35.2MHz
  8514A ... 1024 x 768 ... 35.5MHz
- **12 Months On-Site Maintenance**
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- **VGA Monitors**
  VGA Mono Monitor £100
  VGA Colour Monitor £200
  S-VGA Colour Monitor £300
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- **Educational Discounts**
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- **Slimline Case**
  With Small Footprint

NO MONITOR	MONO VGA 640 x 480 £100	COLOUR VGA 640 x 480 £200	COLOUR S-VGA 800 x 600 £300
GT212 COMPUTER	GOLDSTAR GT212 + GOLDSTAR 4335 MONITOR FST 14" MONO VGA	GOLDSTAR GT212 + GOLDSTAR 1423 MONITOR 31mm 14" COLOUR VGA	GOLDSTAR GT212 + GOLDSTAR 1455 MONITOR 31mm 14" COLOUR S-VGA
£599	**£699**	**£799**	**£899**
+VAT - £703.82	+VAT - £821.32	+VAT - £938.83	+VAT - £1056.33

GoldStar
GT212
80286 PC-AT PERSONAL COMPUTER

Technical Specifications

CPU
- 80286 Microprocessor
- 12.5MHz & 6.25MHz selectable clock speeds
- 80287 Math Co-Processor Socket

ROM BIOS
- Phoenix 286 ROM BIOS

RAM
- 1Mb RAM standard
- Motherboard configures to 1Mb, 2Mb or 4Mb RAM

MASS STORAGE
- 40Mb Hard Disk
- 24ms Average Access time (CORE Test)
- 720K/Sec Data Transfer (CORE Test)
- 5¼" Half Height Floppy Drive 1.2Mb

HARD DISK CONTROLLER
- AT Interface - IDE-40 Connector

FLOPPY DISK CONTROLLER
- Supports 2 drives, multiple formats
  5¼" Double Density (360Kb)
  5¼" High Density (1.2Mb)
  3½" Double Density (720Kb)
  3½" High Density (1.44Mb)

EXPANSION SLOTS
- 3 Full length Slots (2 x 16-bit, 1 x 8-bit)

SPEAKER
- Internal, programmable speaker

CLOCK/CALENDAR
- Real-time clock and calendar with CMOS RAM with battery back up for system configuration

UK KEYBOARD
- Detachable, Enhanced PS-2 style
- 102 sculpted keys
- LED indicators for Num Lock, Caps Lock and Scroll Lock

PARALLEL INTERFACE
- Centronics compatible parallel interface
- DB25 female connector on the motherboard

SERIAL INTERFACE
- RS 232 serial interface
- DB9 female connector on the motherboard

MOUSE INTERFACE
- Mouse port PS/2 compatible
- 6-pin Mini DIN connector on the motherboard

MOUSE
- Microsoft or Mouse Systems compatible mouse

VIDEO
- The following resolutions are provided by the built-in (on Motherboard) VGA Paradise * adapter with 256K of Video RAM

VGA	320 x 200	256 Colours	31.5MHz
VGA	640 x 480	16 Colours	31.5MHz
S-VGA	800 x 600	16 Colours	35.2MHz
8514A	1024 x 768	4 Colours *	35.5MHz

* The 8514A Option is a standard installed board.

VGA MONITORS - OPTIONAL

Monitor	Description	Max Res	Specification	Price
MBH4335	Mono 14" VGA	640 x 480	64 Grey levels	£100
GS1423	Colour 14" VGA	640 x 480	31mm Pitch	£200
GS1455	Colour 14" SVGA	800 x 600	31mm Pitch	£300

All Video Displays include a tilt and swivel base. All prices exclude VAT. The prices of £100, £200 and £300 are specially discounted and are only available if the monitor is purchased with a GT212 computer

POWER SUPPLY
- Switch selectable, fan cooled
- Input voltage 115/230 Volts AC, 60/50 MHz
- Output 5v +/- 12v DC Power

DIMENSIONS
- Slimline Case - Small Footprint
- CPU - 42.5 x 38 x 10.5 cm (W x D x H)
- Keyboard - 47 x 21 x 3.5 cm (W x D x H)

SOFTWARE INCLUDED
- MS-DOS 4.01 with DOS Shell
- GW-Basic V3.2
- Goldstar Startup & Diagnostics Programs
- VGA Utility Program
- GEM 3 Desktop - WIMP environment
- GST's First Word Plus - Word Processor

MANUALS INCLUDED
- MS-DOS V4 User Guide
- MS-DOS Shell Guide
- GW-Basic Manual
- GT212 Operations Manual
- GEM 3 Desktop Guide
- First Word Plus Manual

SOFTWARE OPTION
- Microsoft Windows v3 £99+VAT

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Fax: 0703 847754

VISA

Loutronics

Access

Micro House, 11 Hercies Road, Hillingdon, Uxbridge, Middlesex UB10 9LS
Tel: (0895) 55399 (Sales) (0895) 72307 (Enquiries)

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£39.95

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ITEM 3
Sony 1.44/720 3.5" Drive
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ITEM 4
Sony 720K 3.5" Drive
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ITEM 5
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ITEM 6
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£8.95

ITEM 7
Astec P.S.U. (Back in Stock) +12V @ 1.5A, 12V @ 0.4A, +5V @ 3.75A
£9.95

ITEM 8
20MB Kyocera 3.5" MFM Hard Drive
£99.00

ITEM 9
Kyocera 40 Meg IDE AT Hard Drive
£195.00

ITEM 10
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£39.95

ITEM 11
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£49.95

ITEM 13 & 14
Ex-Equip. P.S.U.
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AT 195 watt **£49.95**
3 Months Warranty

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£34.00

ITEM 16
AT IDE controller Inc. FDC/RS232/LPT
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ITEM 17
XT IDE Controller
£49.95

ITEM 18
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ITEM 19
Optima SVGA card 16 bit 1024 x 768 x 16 cols, 800 x 600 x 256 cols
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ITEM 20
Mono TTL 14" Monitor Ex-Demo
£59.95

ITEM 21
14" Mono VGA Monitor 640 x 480 res. Ex-Demo
£69.95

ITEM 22
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£29.95

NOTE: All Drives are BARE UNITS

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tower case from their range would probably be much better than the one I had. With an eye on the purse strings, though, I decided to press on with the much cheaper flip-top case.

The first job was to take out the power supply and screw in the plastics board guides to the inside front of the case. These are intended to support any full length boards which might be fitted latter on and they could prove awkward to fit with the machine completely assembled.

Stand-offs

Next,the brass stand-offs were fitted to the underside of the motherboard, ensuring that each stand-off had a fibre washer fitted under the board and the screwhead to prevent damage to the tracks. Some of the holes for the stand-offs had large pads surrounding them connected to 0V and for these I left out the fibre washers under the screwheads to gain a good earth to the case. The motherboard was now placed inside the case, in the position it should occupy and the alignment of the expansion slots checked against the cutouts in the rear panel. This I carried out by plugging boards into the first and last slots on the motherboard, visually checking their fit in the back panel slots. The motherboard was now screwed in place, with the screws provided, ensuring that the slots remained aligned.

A very comprehensive instruction manual is provided with the motherboard and this should be read carefully before actually plugging anything onto the board. In fact, in his book *PC-DIY*, Roy Bunce actually reckons that the various leads provided with the case are made up by colour blind monkeys. With this in mind the leads should be carefully checked back to the l.e.d. or switch on the front panel. Not all of the leads will be used - if you have no hard disk fitted then obviously the hard disk l.e.d. will not be used. Carefully plug in all the leads which are to be used, checking at each stage.

The power supply is fitted next. With the Blackmore TurboXT motherboard all of the power sockets are out in the open, but some boards have the power sockets tucked underneath the power supply, making it very difficult to 'plug-up' with the supply fitted.

The floppy disk drives fit into a metal housing, sliding in from the front through the opening in the front panel. You must have at least one floppy drive fitted and this should be a 360Kb 5.25in model. Most of these drives are 'half-height', so the opening left in the front panel should be blanked off with the plastics panel supplied with the case.

In my machine I also fitted a second drive as I wanted the facility to use 3.5in disks. This drive requires a special adapter cradle to fit it into a 5.25in opening, but these are readily available. The drives are held in place with two screws each side, but beware - there are usually several tapped holes in the sides of the drive and they are not all the same thread. Test the screws provided before installing the drive so that you know which fixing holes to use.

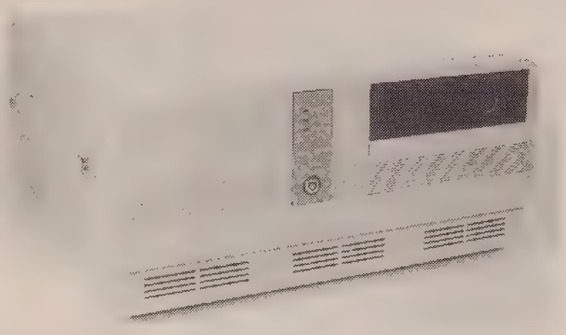
The disk drives are connected by a special ribbon cable to the socket on the motherboard, ensuring that the drive that is to be designated Drive A is the one at the end of the cable, after 'the twist'.

The Big Moment

Now that you think that your PCXT is complete you should thoroughly check everything again before switching on. The video card must be properly plugged in and the screw holding the top of the backplate fitted. All unused slots in the back panel should have a blanking plate fitted, otherwise you could suffer from overheating problems.

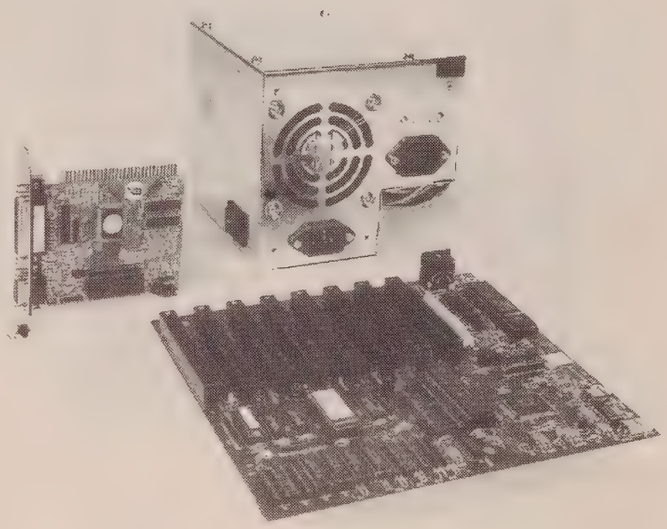
Check that you have configured the d.i.p. switches on the motherboard for the combination of memory, disk drives and display - the manual for the motherboard will give you the correct settings. The MDA card will probably have links or d.i.p. switches which must also be set correctly - again follow the instructions.

You can now switch on!



The Baby XT/AT case from Blackmore Electronics with one 5.25in 360Kb drive fitted. There are three half-height disk drive bays provided in this case, but the bottom one can only be used for a hard disk drive as there is no front panel opening for it.

The power supply, XT Turbo motherboard and Super Dual Display Adaptor card for the 'minimum system'. A keyboard, disk drive, case and monitor will be needed to complete the computer.

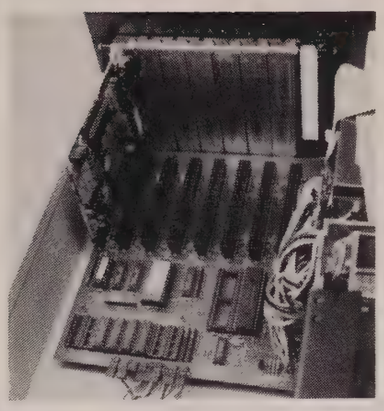


Some sort of display should appear on the monitor while the BIOS carries out its start-up check of the memory. If this is all right you can insert the System Disk into Drive A. You did buy a DOS didn't you? If you forgot you will have to wait until it arrives - without it the computer is lifeless. Personally I have found DR-DOS 5 to be a bit more user-friendly than MS-DOS - if any DOS can be termed user-friendly!

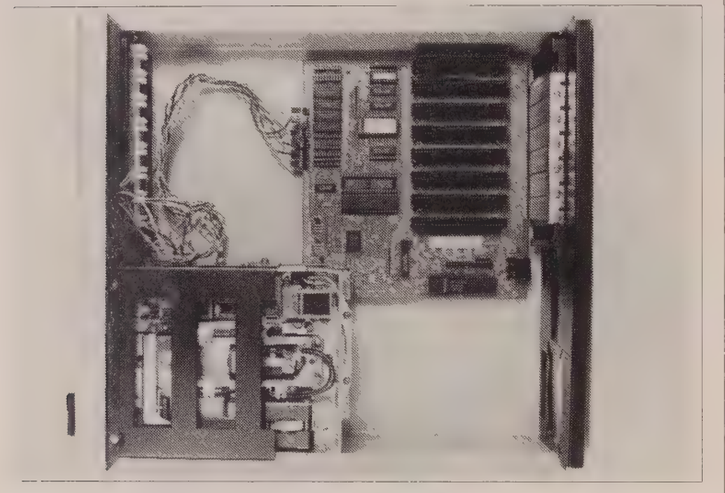
If all seems to be well, check that you can read and write to a disk in the drive as well as format blank disks. If this tests out correctly all is well and the machine should be usable as a simple computer.

Future Expansion

At the start of this article I explained that I had intended to build up a minimum system for as low a price as I could using whatever I could find at amateur radio rallies. This idea went out of the window at an early stage and is not one I would recommend to anyone but a sadist. The problems can be horrendous as you wrestle with unknown d.i.p. switch settings and links let alone old or specialised BIOS chips. If you do decide to go along the *El Cheapo* route, I can assure you that you will burn a lot of midnight oil, loose a lot of hair and possibly not even finish with a working computer. Having said that, some



The XT Turbo motherboard fitted into the case. The Super Dual Display Adaptor card is fitted into the slot furthest away from the power supply. The open slot in the back panel has been left to take an XT clock card. The row of connectors along the front edge of the board are for the various l.e.d.s and switches on the front panel. The RAM plugs into the row of sockets behind these connectors while the large, empty socket to the left of the V20 microprocessor chip is for an optional maths co-processor chip.



All that remains now is for the power supply to be fitted into the open space at the bottom right, the floppy drive cables to be fitted and the Super Dual Display Adaptor card to be plugged in for the 'minimum system' to be ready for use.

companies, such as Loutronics and Oasis Computers, will provide a guarantee and as much information as possible on what they sell at rallies. **Please don't expect them to provide information on boards picked up elsewhere, though.**

Several companies advertise all the component parts needed to build any level of PC and some offer kits that will save you a lot of money over a complete system, yet still be easy to put together with guaranteed compatibility. This is important when you upgrade or add other features.

Having mentioned upgrades, my 'minimum system' didn't remain minimum for very long! A 21Mb hard disk drive was added very quickly and now I have changed the motherboard to an AT 286 and added VGA colour - it makes Solitaire easier to play. Will it never end?

Thank You

Finally, I would like to thank **Roy Bunce** of Blackmore Electronics Ltd., **Lou Bishop** of Loutronics and **Ray Hillard** of Oasis Computer Systems, all of whom have been very helpful. Both Lou and Ray seem to attend most of the better known radio rallies. Last, but not least, thank you, **G1TEX** for all your help. Thank goodness that we use Apple Macintoshes to produce *Short Wave Magazine*!

Recommended Reading

PC-DIY by Roy Bunce BA. Blackmore Electronics Ltd. £7.95 inc. P & P.

How to Expand, Modernise and Repair PCs and Compatibles. by R.A. Penfold. Bernard Babani (publishing) Ltd. ISBN 0-85934-216-6. £4.95.

The PC Upgrade Handbook by Clive Smith. Sigma Press. ISBN 1-85058-118-5.£11.95.

A Guide to Personal Computing. by Don Bradbury. Public Domain Software Library Ltd. ISBN-0-9516041-0-4. £3.95 + 50p P&P. ■

Useful Addresses

PC Parts, Kits, Boards, etc.

Blackmore Electronics Ltd., Unit 14A, Sunrise Business Park, Blandford Forum, Dorset DT11 8ST. Tel: (0258) 451347 FAX: (0258) 456046.

Broadberry Data Systems, 1 & 3 The Gate Centre, Syon Gate Way, The Great West Road, Brentford, Middlesex TW8 9DD. Tel: 081-568 6834. FAX: 081-569 7037.

Cavendish Electronics Ltd., 61c Gower Street, London WC1E 6HJ. Tel: 071-436 7422. FAX: 071-580 6704.

Loutronics, Micro House, 11 Hercies Road, Hillingdon, Uxbridge, Middlesex UB10 9LS. Tel: (0895) 72307. FAX: (0895) 55399

Oasis Computer Systems, 6 Bridgewater Road, Sully, South Glamorgan CF6 2RE. Tel: (0222) 531270.

Trident Systems, PO Box 1408, Slough, Berks SL3 8TN. Tel: (0753) 48785.

Of course, you could always take the easy option and buy a ready-built system. There are many of these advertised in the various magazines, but you should check very carefully just what you are getting for your money. Some of the very low cost systems do not have keyboards or monitors, for instance.

As well as the companies mentioned above the following offer complete systems of interest to radio enthusiasts.

Comar Electronics, 109 Moorgreen Road, Cowes, Isle of Wight PO31 7LF. Tel: (0983) 200308.

Siskin Electronics Ltd., PC House, 2 South Street, Hythe, Southampton SO4 6EB. Tel: (0703) 207155. FAX (0703) 847754.

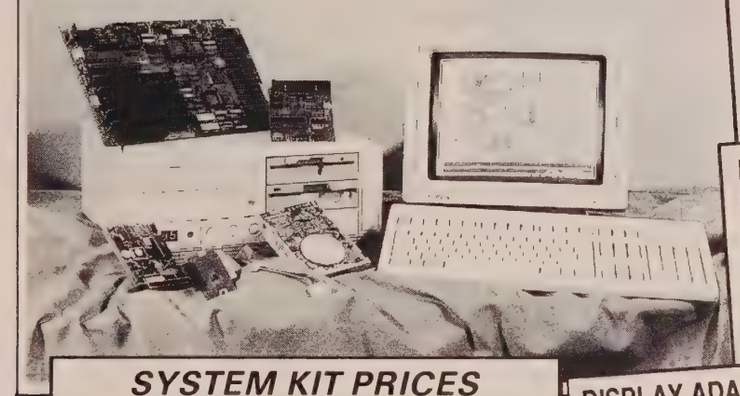
COSTS

Minimum System

	Source	Price
Baby XT/AT case + 200W p.s.u.	Blackmore	117.50
XT Turbo Motherboard	Blackmore	58.75
FC2 Universal Floppy Contoller card	Blackmore	25.00
1Mb RAM	Blackmore	57.50
360Kb, 5.25in floppy disk drive + cable	Loutronics	47.90
Super Dual Display adaptor card	Blackmore	41.15
UK 102-key keyboard (XT/AT)	Blackmore	47.00
12in monochrome monitor (ex - demo)	Loutronics	49.95
DRDOS 5	Blackmore	70.50
Total		**£515.25**

The prices quoted include VAT but not necessarily carriage. It is possible to better some of these prices by shopping around - but beware of the apparently cheap bargain which will really cost you in the end!

BUILD IT YOURSELF



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XT 12MHz V20 MONO HD20	£499.00
286 12MHz MONO HD40	£599.00
286 16 MHz MONO HD40	£609.00
386SX 16MHz MONO HD40	£749.00
386DX 25MHz MONO HD40	£999.00
386DX 33MHz MONO HD40	£1299.00
486 25MHz SVGA HD40	£2399.00

UPGRADE PRICES. ADD

Deluxe or mini-tower case	£50.00
Second floppy drive	£50.00
MSDOS 4.01 in lieu of DRDOS	£20.00
SVGA in lieu of MONO	£225.00
Extra RAM (per Mbyte)	£50.00

All kits are complete systems using high quality components. We provide full technical support and a 2 year return-to-base guarantee. If you prefer, we can build the system for you for only £20 + VAT.

Mono systems are supplied with a dual Hercules/ CGA controller with CGA emulation mode.

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Suitable 180W PSU £60.00
DE-LUXE with speed display £60.00
Suitable 200W PSU £60.00
MINI TOWER with speed display £65.00
Suitable 200W PSU £60.00

FLOPPY DRIVES

5.25" 360K £63.00 5.25" 1.2M £54.00
3.5" 720K £54.00 3.5" 1.44M £63.00
5.25" cradle for 3.5" drive with adapter cables £10.87

MOTHERBOARDS

XT TURBO 12 MHz V20, small size takes 256k x 4 DIL £50.00
AT TURBO 12MHz baby size up to 4M on board £100.00
AT TURBO 16MHz version £112.00
386 DX 25 MHz up to 8M /board £504.00
386SX ALL-IN-ONE 16MHz includes floppy, serial and parallel ports. Takes 1M x 1 £336.00
Memory is available for all these boards.
Please call for current prices

KEYBOARDS

101 key XT/AT switchable
PROFESSIONAL £40.00

DISPLAY ADAPTERS

Hercules plus printer £27.00
Dual CGA/HERC £35.00
EGA PLUS £84.25
VGA 8 bit £51.30
Universal VGA 8/16 bit.
VGA, EGA, CGA, MDA, Hercules
Standard plus 800 x 600 plus
1024 x 768 resolution £84.28

DISK CONTROLLERS

Universal floppy
Drives 360/1.2/720/1.44 drive suitable for XT
AT and 386 systems £21.30
XT Hard/floppy controller £70.51
XT Hard disk controller £56.00
AT floppy/Hard controller £67.60

I/O ADAPTERS

Serial RS232 £12.00
DUAL RS232 £22.43
Serial/parallel game com 1,2,3,4
PAR 2, 3 links £13.00
Dual serial + par + Game £24.00
XT SER/PAR/CLOCK/ FLOPPY/GAME £35.00

MONITORS

MONO 12" green £70.00
VGA 14" paper white £112.00
VGA 14" colour £247.08

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VGA systems include a super VGA monitor and a 1Mbyte SVGA controller giving 256 colours at 1024 by 768 resolution.

DRDOS is supplied with all systems as standard and a starter disk of good shareware software is included free of charge.

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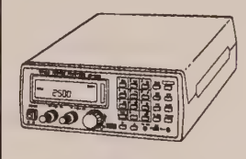

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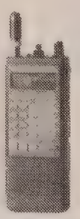

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Radiocom Bonito Program

With IBM compatible computers increasing in popularity, a new utility decoding package is bound to attract plenty of interest. The Radiocom Bonito, reviewed here by Mike Richards, includes many interesting features.

This interesting package features full transmit and receive capabilities on RTTY, c.w. and FAX. As an added bonus the Bonito can decode the MSF and DCF77 standard time transmissions.

There are many different ways of decoding utility signals, but the Bonito uses a combined hardware and software approach. The audio output from the receiver is filtered and processed before being applied to the computer for decoding. The decoder is housed in a neat plastics case measuring 85 x 37 x 162mm. Connection to the computer is via a lead with a 25-way D connector plugged into a standard serial port. The audio connections are via an unterminated four-wire cable, which carries an audio output and p.t.t. signals as well as the receive audio from the speaker or earphone socket.

The front panel of the decoder is very simple, just a single l.e.d. and rotary control. This control is used to adjust the characteristics of the internal filter.

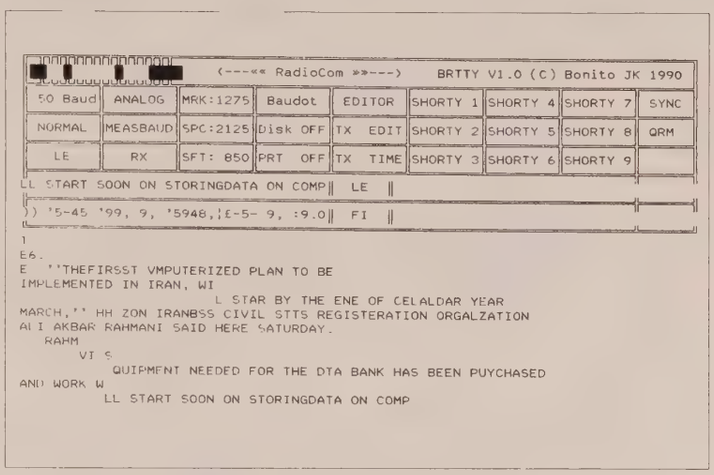
Power could either be taken from pin 12 of the serial port or from an external 12V supply. The external supply being fed via a 5.5mm coaxial jack on the rear panel.

On to the computer. The Bonito needs a basic IBM compatible with 512K memory and either Hercules, EGA or VGA video cards. For FAX reception, best results were obtained with a VGA card. The only other requirement is a single serial port.

The review software was supplied as two compressed files on two 360K 5.25in floppy disks. These two files had built-in routines for decompression, so installation was simple.

Intructions

Details of installation and operation were in a 32-page A5 booket, with plenty of detail on the various operating



Bonito RTTY screen.

modes and some more advanced features. The main problem was that the manual was a crude translation from German and so was not as clear as it could be. An example of this was the FAX synchronisation pulse that was described as a 'klicking ton'. Because of this and the slightly unusual way in which the program operated, it took a long time to find my way around the various modes. Despite its shortcomings, there was a wealth of useful information in the manual.

Menu Driven

The Bonito is different from many other decoding systems as each mode and display routine is dealt with by a separate program. All the programs are linked by a menu system that can be re-configured by the operator. There are a maximum of fifteen entries, each has the facility to send user defined parameters to the called program. The great advantage with this is that you can include other programs in the menu and so drive all your comms requirements from the one menu system. The only disadvantage is that swapping between modes became a little slow.

Another advantage of the use of modular programs is that you can call all the modules using your menu system. Perhaps a good example of this would be to link the Bonito to the Shareware package Automenu. This is a very sophisticated and fast menuing system that can be obtained from the Public Domain Software Library.

One really interesting feature of the FAX and RTTY modes is the use of parameter files. These contain all the start-up settings for the called program. Although the program was supplied with a set of standard parameter files, the instruction manual contain all the information needed for the user to create their own files. This is very useful as you can create a whole range of files to cover all your standard requirements, saving the hassle of having to reset the parameters on entry.

Once a mode had been entered and the parameter file specified you are ready to transmit or receive. As you would expect there are many commands available once the program had been started. These were accessed and changed in the main by using the function keys. Taking the FAX mode as an example, the following adjustment could be made:

(1) Part or full picture. (2) Tuning display on/off. (3) Number of images to be stored automatically. (4) Display speed. (5) Printer on/off. (6) Time display. (7) Positive or negative image. (8) Left/right reversal. (9) Disk storage on/off. (10) Disk file name. (11) Change start frequency. (12) Change stop frequency. (13) Enter start and stop time for automatic reception. (14) Select drum speed. (15) Select IOC. (16) Correct timing errors. (17) Save set-up details to disk. (18) Resynchronise image. (19) Search through image with cursor keys.

As you can see from this, the range of adjustment was extremely wide. By setting the system to view only part of an image the screen gave a useful magnification.

One key issue when receiving FAX transmissions is getting the tuning right. The Bonito handles this with an on-screen bargraph display that operates as a tuning indicator. Although not as effective as a separate analogue unit, it did prove useful. When set for automatic reception, the Bonito responds to a start tone and subsequently locks-on to the standard 30s synchronisation pulses. On receipt of a stop tone the process starts over again until the preset number of images had been received. This means that, provided the receiver stability was adequate, completely unattended operation was possible. This is particularly valuable with FAX transmission as the reception process is generally about as exciting as watching grass grow!

Once an image has been received and stored on disk the Bonito has several facilities to help the operator. The most used is likely to be the display option. Besides simple viewing of the image this module includes a feature to allow part of the image to be selected and saved as a separate file. You can even save the image as a standard

PIC or LBM format file for later manipulation with a commercial graphics package.

Although viewing images on screen is perhaps the most popular, it's useful to have hard copy for the occasional chart or interesting photo. As with the other parts of the Bonito the image printing is handled by a separate program module. The ability to handle a wide range of printers is facilitated by using a printer control file. This containes details of the set-up strings for the printer that was used to run the graphics print modes. The review version was supplied with ten sample files that covered most of the common printers including 24-pin and laser models. There was also full instructions in the manual, so it was possible to build your own control file if you happen to have an unusual printer.

Full-featured RTTY

As with the FAX module the RTTY implementation was very comprehensive. Baud rate selection was either by toggling through five preset rates or alternately specific baud rates between 30 and 600 baud could be entered via the keyboard. Polarity reversal was handled by a simple key press, as was the figure and letter shift. Besides receiving standard RTTY, the Bonito can be set for either 7 or 8 bit ASCII signals. Providing the signal was strong enough, there was a facility to measure the baud rate of the received signal. For those interested in transmission the Bonito included a full text editor with the provision to store standard messages.

CW Module

The Bonito handles the reception of c.w. via a module that is part of their Supercom package. Because of this, the c.w. module showed RTTY options but these were not usable with the supplied decoder. Understandably, this caused a certain amount of confusion. Operation of the c.w. section was very straightforward thanks to the automatic speed tracking. The automatic function was extremely fast in operation and was only spoilt by the very sensitive tuning. The result of this was that I found it difficult to find the optimum tuning point.

Standard Time Signals

The Bonito has the ability to decode the German DCF77 and British MSF standard transmissions. These stations transmit an interrupted carrier, coded to convey the date, time and messages such as BST. When this module is started, the computer clock time is displayed in red on the screen. When enough data is received, the display colour changes to green and the correct time and date are displayed. An added bonus with this system was that a single key press caused the computer clock to be updated. ■

Summary

As can be seen from this review, the Bonito is certainly a very versatile decoding package with a unique range of features. I felt that the program, as presented for review, could benefit from improved documentation. The use of part of a different package to provide the c.w. facility was also very sloppy and likely to confuse newcomers. This gives the impression that the manufacturers couldn't be bothered to extract the c.w. routines for inclusion in the Bonito.

Despite these criticisms, the Bonito performed very well and represents very good value for money. The Radiocom Boinito can be obtained from **Arrow Electronics, 5 The Street, Hatfield Peverell, Chelmsford, Essex CM3 2 EJ. Tel: (0245) 381626.**

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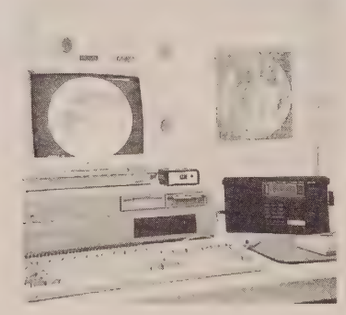

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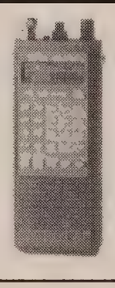

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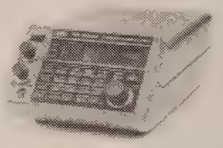

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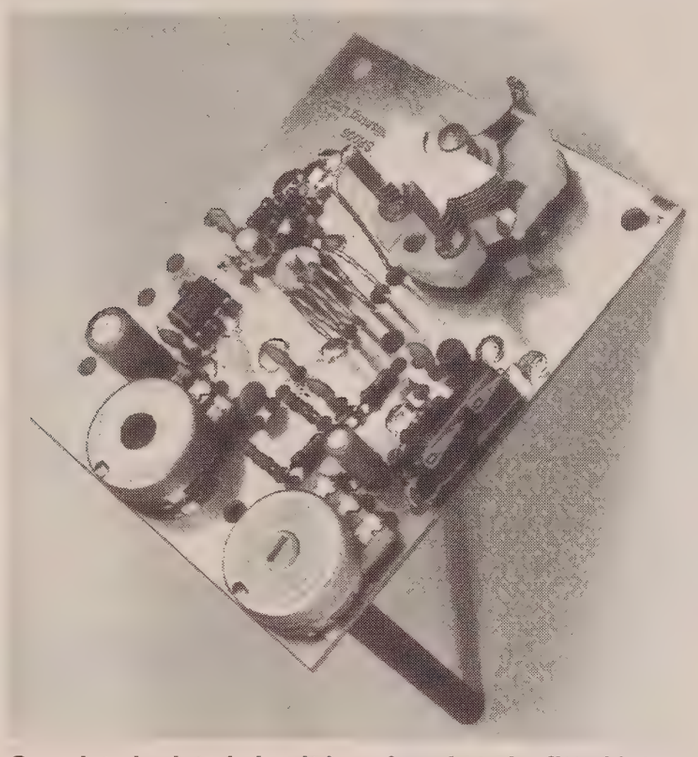
An Experimental VHF Receiver

Part 2

This month Ray Howgego concludes his unusual v.h.f. receiver with a description of its construction. The techniques used are the conventional ground plane ones used at these frequencies.



Completed printed circuit board ready to be fitted into the case.

The entire receiver is constructed on a small, double-sided p.c.b., all connections to the 0V line being soldered to the copper ground plane on the component side of the board. The board is designed to be mounted behind the front panel using three stand-offs through the holes provided. The control shafts, which should be cut to the required length before fitting, protrude through clearance holes in the front panel. The precise size and shape of the enclosure, which may be metal or plastics and could contain a loudspeaker and power supply or battery, is left to you, the constructor. It is, however, worth mentioning that if a battery is to be used for portable work, it should be the larger PP9 or equivalent. The printed circuit board has been designed for the Maplin potentiometers specified in the 'You Will Need' panel in Part 1, and might need modification for other types.

Construction

You are strongly advised to assemble the board in the order outlined here. The p.c.b. supplied by the *SWM* PCB Service is pre-tinned to make soldering easer. Soldering to the ground plane side of the board will require a soldering iron of not less than 25W.

Start with the six Veropins for the external connections to the board. Insert and solder the amplifier chip, IC1. Note that pin 3 of the chip is soldered to the ground plane and pin 5 is soldered on **both** sides of the board. This precludes the use of an i.c. socket, but the TDA 7052 is an electrically robust chip and unlikely to need replacing. Wind the coil L1 as detailed in Fig. 2. 2(a). It is possibly easier if you solder the tapping point to the wire before winding the coil. Suitable copper wire for the coil can be extracted from a length of flat 1mm² Twin & Earth mains cable. Insert and solder L1 so that it stands about 2mm above the board, soldering the end nearest the tap to the ground plane. Transistor TR1 (BFY90) is fitted so that it stands no more than 2mm above the board. The case lead of this transistor must be pre-formed so that it can be soldered to the ground plane as shown in Fig. 2.2(c).

Now solder in place all the capacitors having connections to the ground plane. The lead that is connected to the ground plane should be bent at 90° to the capacitor body before the component is inserted. In particular, C3 should be soldered right up against the capacitor body leaving no lead length.

Insert and solder all resistors having ground plane connections. Solder in the trimmer C5; and transistor TR2 (TIS43), one lead of which is soldered to the ground plane.

Construct the r.f. choke (RFC1) by threading 6 turns of thin enamelled copper wire through a ferrite bead as shown in Fig. 2.2(b). Scrape the enamel from the ends of the wire and solder into position. Insert and solder all the other fixed resistors and capacitors, ensuring that electrolytic types are the right way round.

Carefully remove the the m.o.s.f.e.t. TR3 (3SK88) from its adhesive backing tape, preferably with plastics tweezers. The 3SK88 is static-sensitive but is protected by integral diodes and I have never managed to destroy one of these devices, despite having mishandled many! Place the transistor on the track side of the board with its body in the hole and the writing visible from the ground plane side through the hole in the board. Carefully and quickly solder each lead in turn to its track on the board.

Bend the tags of potentiometers R7 and RII sharply through 90°; then fit them to the board using the nuts and washers provided so that the tags fit through the holes for soldering to the pads or ground plane as appropriate.

Fit the variable capacitor C6 and connect the shortest possible wire link between the fixed plates and the hole adjacent to L1.

This completes the assembly of the board. Once the receiver has been thoroughly tested it is worth giving the copper side of the board a thin coat of gloss varnish to preserve its appearance.

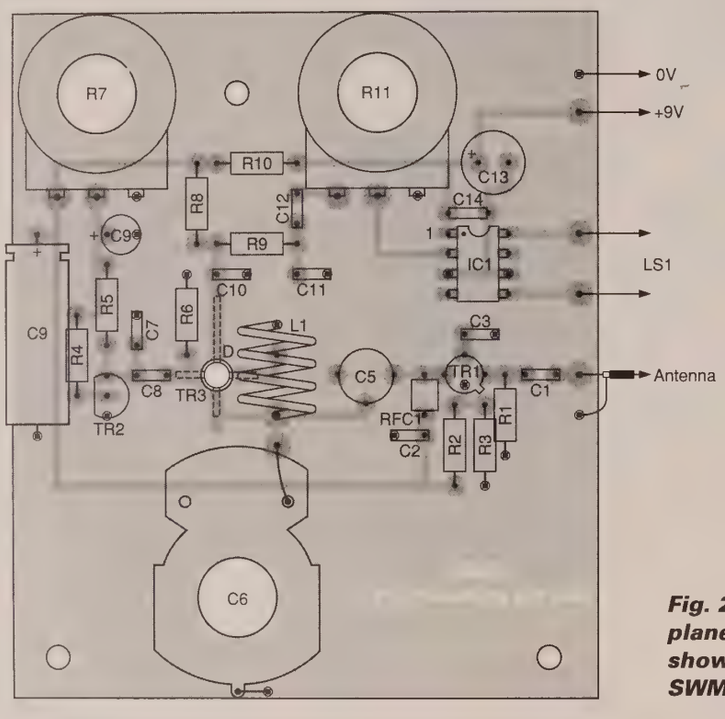
Testing and Adjustment

Connect a power supply of between 6 and 12V, and a loudspeaker (or headphones) of 3 to 8Ω impedance to the relevant pins. A metre or so of flex may suffice as a temporary antenna, connected to the pin adjacent to C1. Set R7 fully anticlockwise, RII at its midpoint and C5 and C6 with their plates half-meshed.

Switch on the power supply and slowly rotate R7 clockwise until a very obvious hissing noise is heard. This indicates that super-regeneration is taking place. If the noise is not apparent, unmesh the plates of the trimmer C5 slightly and try again. If even this fails, switch off and thoroughly check your construction. However, assuming that all is well, rotating the tuning capacitor C6 should bring in airband and local f.m. broadcasting stations at a strength dependent on your location .

The circuit is probably most sensitive when it is just at the point of regeneration, that is, when the noise between stations is barely apparent. In fact just as many stations can be heard when R7 is backed off so much that the inter-station noise disappears altogether. The recovered audio is certainly louder in amplitude giving a false impression of reduced sensitivity, but operating the receiver becomes a more pleasant task and selectivity, if anything, is improved.

Having confirmed that the circuit is working, you should try a better antenna, which will certainly produce a spectacular improvement over the original. If the tuning range is not quite as desired, try compressing or extending the turns of the coil, inserting an iron-dust core, or even changing the coil for one with a different number of turns to give access to the other regions of the v.h.f. spectrum. Those readers who are experimentally minded could investigate the influence of capacitor C7, as discussed earlier, and the effect of reducing R2, which sets the gain of TR1, to as low as 4.7kΩ. The latter will almost certainly give increased sensitivity but at the risk of TR1 becoming unstable. ■



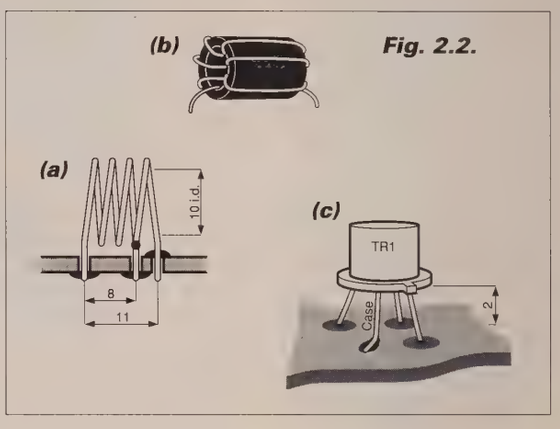
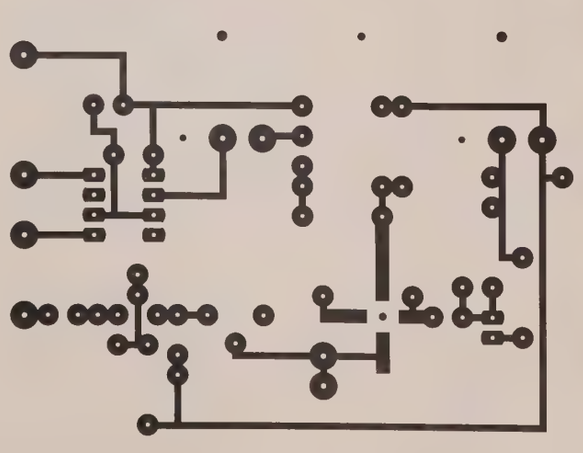
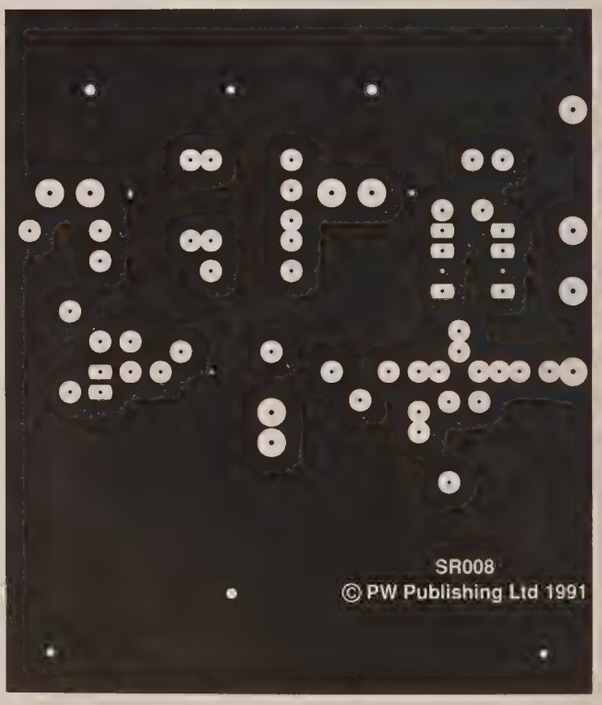


***Fig. 2.1: Full size copper track pattern and ground plane for the p.c.b. The component placement is shown on the left. The p.c.b. is available from the SWM* PCB Service, price £5.82 inc. p&p.**





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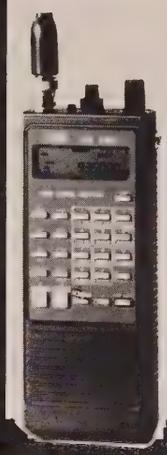

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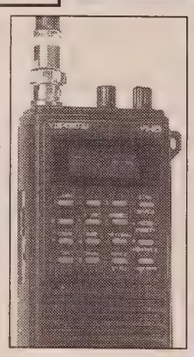

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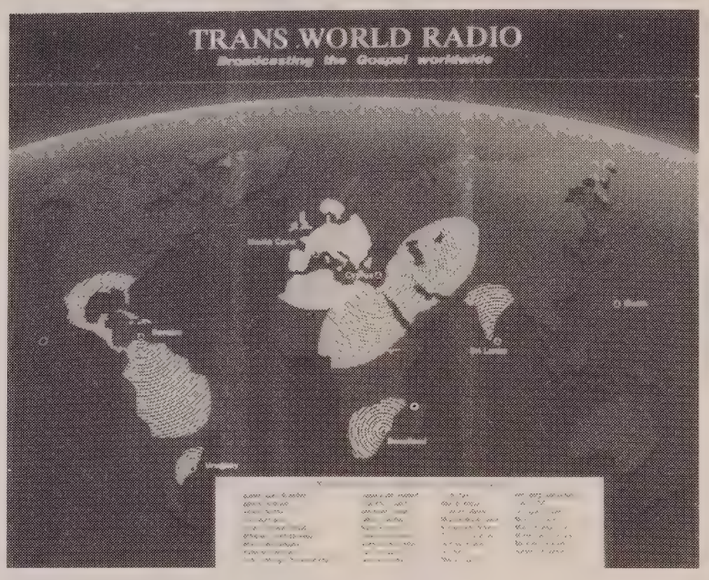
Trans World Poster Antenna

Trans World Radio will be using Poster Antennas to help listeners receive the signal on 800kHz from their radio station located on the Caribbean island of Bonaire, Netherlands Antilles, says Ernie Franke.



Trans World Radio's Medium Wave (a.m.) coverage world wide.

Even a powerful radio station has its fringe area, where the reception depends on the kind of receiver and antenna the listener uses. If increasing the transmitting power were an option, it would be one way of helping the listener who would like to hear that particular station. But it would certainly present problems to any other station that uses the same frequency. As the number of radio stations increases and the transmitting power escalates, something is needed to help reduce the pollution of the delicate radio spectrum. The Poster Antenna is one small device that listeners can use to help our planet reduce energy use and reduce the noise level on the broadcast bands.

Trans World Radio on the island of Bonaire, broadcasting with a power of 500kW, does not have the option of increasing transmitter power, but they are determined to help their listeners. They have found that the well-known tuned loop antenna is a very suitable tool to drastically increase the sensitivity of most medium wave (a.m.) receivers. It is commercially available and does a very good job; but it is relatively expensive ($40), bulky and difficult to mail to listeners. Project Engineer, Hanspeter Wirth, thought "It would be nice if it could be sent in an envelope". He came up with the idea of a 'Poster Antenna' to be used as a promotion for the station.

The first prototype was very delicate. It was made of aluminium foil, plastic foil and thin cardboard, but it produced about 14dB signal gain at the receiver. The electrical engineer Joe Magnuson expressed an interest in the project. He did countless test with many different ideas and for different medium wave frequencies. Being located in the USA, he was well equipped for this research and for organising the first production run. He did most of the research and prototype building, with Hanspeter being the consultant.

Joe proved that, at present, the film type poster antenna would still be too expensive to manufacture - however, Hanspeter has not yet given up hoping that one day they will find a process that will make it possible at low cost. The film type could be lighter, sturdier, foldable, etc.

Joe finally came up with a card type tuned loop antenna having thin, coated, magnet wire wound along the perimeter. This worked as well as the original aluminium foil prototypes. They came up with quite a number of different wire models. When Joe contacted a packaging company, a blister pack was recommended. This finally led to the antenna which has sent out to listeners on the fringe area.The tuning of the antenna is a compromise between tolerable gain loss and affordable tuning effort. They found that 12 to 15dB signal gain in the receiver was a good value to aim for.

How Does It Work?

It is a tuned loop antenna, a coil of fine wire and a small capacitor are sandwiched along the edges inside the plastics container. They form a parallel resonant circuit that resonates at the frequency indicated on the front of the poster - 800kHz. Any electromagnetic field (especially at this frequency) will induce a circulating current in the windings of the

The final design of the Trans World Radio poster antenna.

coil. This current produces a secondary magnetic field around the winding that is of a much higher density than the field out in open space.

When the poster antenna is set in close proximity to a medium wave (a.m.) receiver, the internal ferrite antenna can pick up the energy concentrated in the secondary magnetic field. Since this is a much stronger signal, it can reduce or completely eliminate the hiss from your receiver. In areas where Trans World Radio cannot be heard at all on your type of receiver, you might get 'hissy' reception with the poster antenna applied.

Testing & Research

For two years, many people have participated in research, prototype building and field testing. The final product measures approximately 230 x 280mm with a colour picture of the transmitter on one side and instructions in Spanish, Portuguese and English on the other side. The poster and the antenna components are all heat sealed in a molded plastics case, acting as a picture frame.

TWR HF Transmitting Schedule

Freq kHz	Time UTC	Time Bonaire	Power kW	Azimuth °	Zones ITU	Target	Language
9515	0655-0940	0255-0540	50	170	12NE, 13N	N. Brazil	Portuguese
9535	0300-0430	2300-0030	50	336	2S, 3S, 4S, 6-9, 11	N.Am + C	English
11815	1055-1330	0655-0930	100	327	4S, 7-9, 11	E N Am + C	English
11850	0955-1045	0555-0645	50	176	12, 14	S Am	Spanish
11885	0655-0940	0255-0540	100	148	12SE, 13S, 15	s Brazil	Portuguese
11885	0955-1030	0555-0630	100	172	14, 15	Cono Sur	German
11930	0055-0200	2055-2200	100	327	11	Caribbean	Spanish
11930	0255-0430	2255-0030	100	327	2S, 3S, 4S, 6-9, 11	N Am + C	English
15345	1055-1330	0655-0930	50	336	4S, 7-9, 11	E N Am + C	English
15355	2325-2400	1925-2000	100	160	14, 15	Cono Sur	German
15355	0000-0045	2000-2045	100	160	14, 16	Cono Sur	Spanish
15375	2155-0030	1755-2030	50	176	12NE, 13N	N. Brasil	Portuguese
15.375	0030-0215	2030-2215	50	176	12	N. S. Am	Spanish
15445	2155-2315	1755-1915	100	160	12SE, 13S, 15	S. Brazil	Portuguese

The first production run of 5000 Poster Antennas was completed, at a cost of approximately $1 each. The station offered them to their listeners in the fringe area as a free gift, celebrating the 25th Anniversary of broadcasting from Bonaire. If a listener requested one of the antennas, they were sent a questionnaire a few months later asking them to evaluate the antenna. Some of the replies, tell their own story...

"At times I would be listening to a program and want to hear something special and it would just go down, down, until you don't hear anything at all. But since I received the poster antenna and I placed it to my radio, it comes right up loud."

"Thank you, thank you, thank you for the antenna that you sent me. It works so beautifully. I can hear your voice loud and clear, even when I am outside washing my clothes. But I have one regret, why did you not come up with this long ago. I wish that all other stations will follow."

"Thanks so much for my poster antenna. It has helped considerably. It increases the volume, so I'm now able you listen with greater ease, without having to keep my ear glued to the radio. I can move around while I listen... I can now enjoy Dr Vernon McGee at 10.15pm." ■

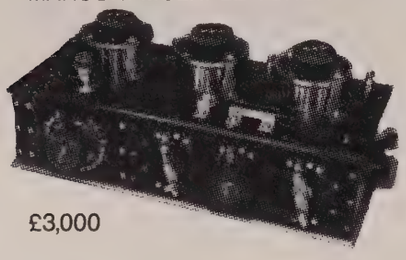
Note:
C = Caribbean
E = East/Easter
N = North
S = South
Am = America
Cono Sur = Southern Cone, SS Am

TWR hope that many other radio stations will also feel inspired to use the idea and make Poster Antennas tuned to their radio frequencies.

WORLD WAR TWO ENGLISH, GERMAN, AMERICAN & JAPANESE SPY & SURVEILLANCE EQUIPMENT, EARLY WIRELESS & PRE-WAR TV SETS WANTED

SOME EXAMPLES OF TYPES AND PRICES PAID

MARCONI MULTIPLE TUNER

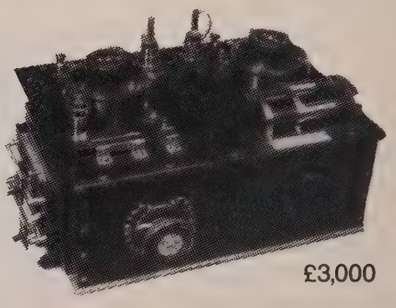


£3,000

MARCONI MAGNETIC DETECTOR

£3,000

MARCONI VALVE RECEIVER

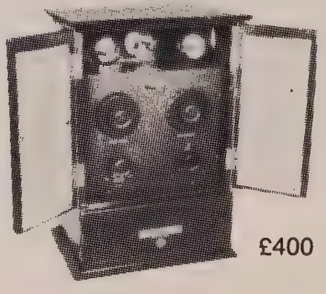


£3,000

W.W.I. TRENCH RECEIVER

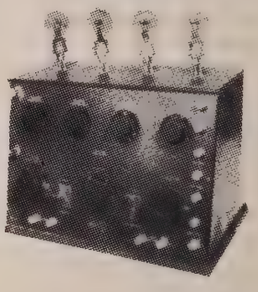
£800

GEC° PHONE 2 VALVE



£400

ERICSSON 4 VALVE

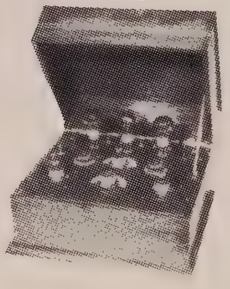


£800

MARCONI V3

£600

PYE 3 VALVE



£600

GEC° PHONE CRYSTAL SET

£100

EKCO

£150

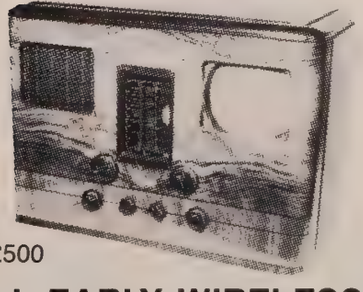
PHILIPS

£200

EKCO

£250

HMV MARCONI TELEVISION

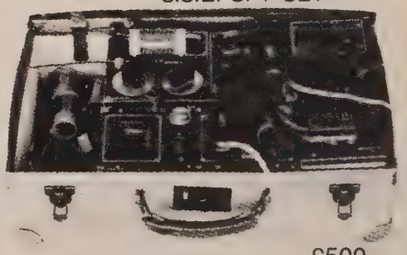


£500

BAIRD TELEVISOR

£2,500

S.O.E. SPY SET



£500

ALL EARLY WIRELESS/TELEVISION SETS WANTED, ALSO HORN GRAMOPHONES/PHONOGRAPHS. MR. YATES, THE HEWARTHS, SANDIACRE, NOTTM. NG10 5NQ. TEL. 0602 393139 OR 0860 362655 ANYTIME.

Early Vintage Wireless Equipment

Nostalgia is in fashion these days. R Coomber takes a gentle look back at some memories of his early days in radio.

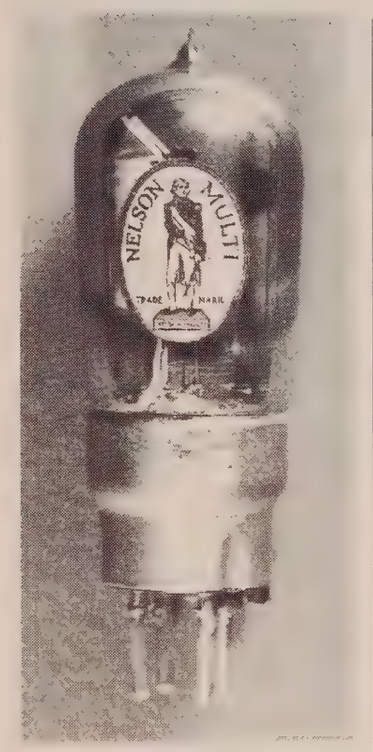


Fig. 1: The Nelson Multi Valve.

The subject of early vintage radio equipment and components seems of great interest to old and young alike. In this connection, looking through some of my old records, I found details of a rather remarkable radio valve that brought back memories of pre-1930 days. Remember, this was a period when 'factory-built' radios were not available; kit sets like the Mullard Master 3 and Cossor Melody Maker for home construction being all the rage, as well as many varies designs published in the press.

As Simple As Meccano

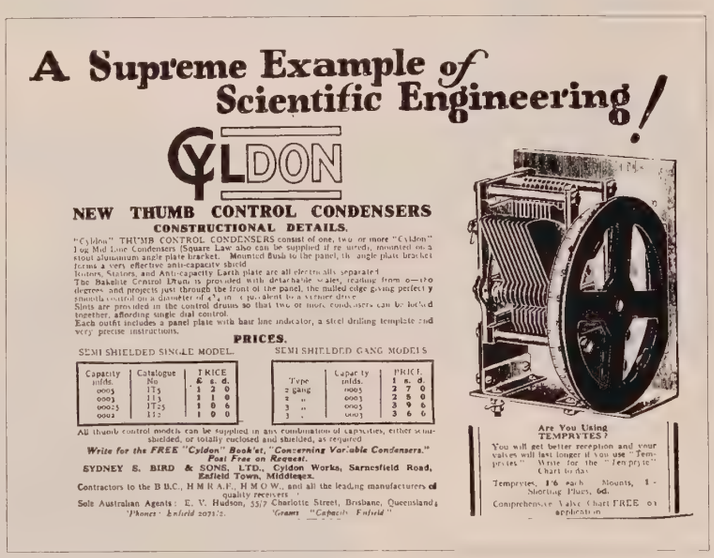
The adverts selling the reader a Cossor Melody Maker extolled, " You can take your pick of the programmes with the wonderful Cossor Melody Maker. The Cossor Melody Maker puts all Europe at your fingertips. At the mere turn of a dial you can bring in station after station - Rome, Paris, Berlin - even a novice can get at least 20 programmes - all at full loud speaker strength and free from interference by your local station - the Cossor Melody Maker cuts out its overpowering transmission like magic. Anyone can build this amazingly successful Receiver.... no soldering, no drilling, no sawing, and no wireless knowledge is necessary it's as simple as Meccano. Get full details from your Wireless Dealer or fill in the coupon below." All this for £7-15s. It was so popular with early wireless constructors that Cossor had to advertise warning people of "a slight temporary delay in the deliveries of one of two components."

Spectacular

Radio shops soon opened up everywhere, all crammed with hundreds of different components. To name a few, Lissen Coils, up to 4-gang tuning condensers by Cyldon and Ormond, magnetic speaker units (no moving coil speakers in those days), grid leaks, Ferranti and Varley l.f. transformers and h.t. 100V batteries of enormous dimensions.

Valves were usually Mullard or Cossor PM1LF and PM2, simple triodes, up to 6 in one radio, with 2V filaments

It was a simple matter for inexperienced operators (who were in a majority) to confuse or 'short' the h.t. battery connections with those supplying the 2V valve filament supply, resulting in a spectacular flash and the need to purchase a set of new valves, as well as plenty of bad language forthcoming! This situation might well have influenced the design and manufacture of the Nelson Multi Valve, shown in Fig. 1. As can be clearly seen, the crude construction is unbelievable, but the idea of inserting three valves in one glass envelope was a design 'out of this world' at the time.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CYLDON
NEW THUMB CONTROL CONDENSERS
CONSTRUCTIONAL DETAILS.
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Post Free on Request.
SYDNEY S. BIRD & SONS, LTD., Cyldon Works, Sarnesfield Road, Enfield Town, Middlesex.
Contractors to the B.B.C., H.M.R.A.F., H.M.O.W., and all the leading manufacturers of quality receivers.
Sole Australian Agents: E. V. Hudson, 55/7 Charlotte Street, Brisbane, Queensland.
Are You Using TEMPRYTES?
Tempryte, 1/6 each. Mounts, 1/- Shorting Plugs, 6d.

Be sure it's RAYMOND'S

RAYMOND'S
For THE TALISMAN 2 KIT OF PARTS

Panel, Strip, .0005 var S.M. Dial, .0002 Reaction, 2 Sprung V.H., .0002, Series Clip, 2-meg. Leak, Wearite Talisman Coil, 7/6, H.F Choke, Formodenser "J," P.P. Switch, 8 Terminals, Wire, Plugs, G.B. Clips.

Nett Cash Price **39/6**

POST (U.K.) 1/- Not C.O.D.

ONLY OBTAINABLE AT RAYMOND'S

RAYMOND'S
BRITAIN'S FAV. 3 KIT OF PARTS

Ormond Log .0005 and .00025, 7-ohm Panel, 3 V.H., Formodenser type "J," .0005 and Series Clip, 2-meg. Leak, H.F. Choke, R.C.C. Unit, 50,000-ohm Wire Wound, 2-mfd. Mansbridge, L.F. Transformer (add balance any other), Push-pull Switch, Panel Brackets, Indicator, G.B. Clips, 6-pin Base, Wire, Thin Flex, 7 Engraved Terminals, Ebonite Panel, 16 in. by 8 in., Tunewell Dual Coil, 6-pin, 7/6; Lewcos Short Wave, 20/45 or 40/90, 7/6 extra.

Nett CASH PRICE **55/-**

Post (U.K.) 1/- Not C.O.D.

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De Luxe .0005, .00035, Ormond 400-ohms, "Q" Aerial (any good make in stock), 15/-, 3 Sprung Valve Holders, T.C.C. .0003 s/f 2-meg. Leak, Lissen R.C. Unit, P.P. Switch, H.F. Choke (any good make) about 5/-, Igranic 6-1, 17/6, 4 Engraved Terminals, Brackets, Formodenser, Ebonite Panel, 16 x 8, 2 Strips, Tube, Wire, Flex, Plugs, Spades, 2 4-in. Dials.

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Igranic .0005 and .0003, 2 S.M. Dials, 15-ohm Rheostat, S.G. Holder, 2 Sprung V.H., .0002 and two .0001 Fixed, 3-meg. Leak, Lewcos Fixed Potentiometer, Telsen L.F. Radiogrand, Screen 10 x 6; Panel, 13 Terminals, Wire, Grid Leak Holder, Indicators, Panel Brackets.

BINOWAVE COILS (Wearite) 34/- pair. Offered subject to delivery.

Nett CASH PRICE **55/-**

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RAYMOND'S
BANTAM 3 KIT OF PARTS

Panel, 3 Valve Holders, 6-ohm Rheo., H.F. Choke, L.F. Telsen Radiogrand, 12/6 (add balance any other), Tunewell Dual Coil, 6-pin Base, R.C. Unit, o.o Switch, .0002 fixed, 2-meg. Leak, .0005 variable, S.M. Dial, 7 Terminals.

50/-

Post (U.K.) 1/- Not C.O.D.

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For OSRAM MUSIC MAGNET

G.E.C. KIT OF PARTS, OAK CABINET, THREE OSRAM VALVES, 120-v. H.T. AND 2-v. L.T. CONE SPEAKER.

Nett Cash Price **£10 - 10 - 0**

Packing and Carr. 7/6

ONLY OBTAINABLE AT RAYMOND'S

RAYMOND'S
CLARION S.G. 3 KIT OF PARTS

Any other Condenser, H.F. Choke, or L.F. Supplied (add balance). 2 Variable .0005, 5/6 each; Reaction 4-, 2 Clarion Dual-range Tunewell Aerial and Anode, 10/6 each; 3 Sprung Valve H. at 1/3; "J" Formo, 2-; 1-mfd., 2/6; .01, 1/9; 3-meg., 1/-; S.G. H.F. Choke, 5/-; H.F. Choke, 5/6; Telsen Radiogrand L.F., 12/6 (or Lotus, 12/6); .0002 and Series Clip, 14 x 7 Ebonite Panel, Screen 8½ x 6; 8 Engraved Terminals, Push-pull Switch, Flex, Plugs, 18g. Wire, 2 S.M. Dials.

NETT CASH **70/-**

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READY TO USE In Handsome Cabinet. Receives London, 5GB, 5XX & many Continental Stations.

Mullard Master 3 STAR Circuit Simplified

NO COILS TO CHANGE

JUST SWITCH ON—THAT'S ALL

MULLARD MASTER 3★CIRCUIT (SIMPLIFIED)

This new and wonderful set must appeal to Young and Old, amateur and experimenter—in fact, EVERYBODY!

COMPLETE as shown IN CABINET (Hinged lid) ALL PARTS Enclosed. 3 DULL EMITTER (1 Power) VALVES TUNEWELL DUAL COIL (200-2000 metres) GRID BIAS, 4-way Leads 2 SLOW MOTION DIALS READY TO USE.

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WITH LATEST TRIOTRON DARK EMITTER VALVES. Plus 5/- Carr. **75/-**

WITH MULLARD PM2, PM1HF, PM1LF. Plus 5/- Carr. **89/6**

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Delivery in Rotation

EXTRAS IF REQUIRED Carr. Extra
L.T. Batteries, 2 volts, 3/6, 9/-, 10/6; H.T. Batteries, 100 volts, 10/-, 12/11; Speakers, Amplion, 21/-; Ormond, 29/6; Marconi, 30/-; B.T.H., 37/6; etc.

OAK SPEAKER CABINET
12 x 12 x 6
Cone on baffle board, Aluminium chassis, complete with unit:
Blue Spot 66K - 32/6
Latest Tefag - - 24/-
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The above prices are for the cabinet, chassis, cone and unit
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TESTIMONIALS
£50 TO ANY CHARITY IF NOT GENUINE

From Mr. A. Wall, of Sparkhill, Birmingham, 7/11/29:—
Sir,—Thank you for set, etc., for which I am very proud: it is all it claims. I was extremely astonished; its merits are unequalled.
Wishing your sets every future success, and thanking you again, I remain,
Yours sincerely,
(Signed) A. Wall.

From Francis Shaw, of Otley, Yorkshire, 9/11/29:—
We have received the wireless set in good condition. We are very satisfied with it, and thank you for the courtesy shown to us.
I am, yours faithfully,
(Signed) Francis Shaw.

From A. C. Morton, of Hartley Wintney, 3/10/29:—
Dear Sir,—Have received wireless set, etc. (yesterday). I am more than pleased with same. It has surpassed my expectations, and you can be sure I shall recommend your firm in future to my friends.
Yours truly,
(Signed) A. C. Morton.
And many OTHERS.
Above refer to De Luxe model.

QAT COILS Wearite **15/-**

TALISMAN DUAL COIL **7/6** (Wearite) Magnetic Reaction

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2 volt or 4 volt
Universal, R.C., or Super H.F. each **5/6**
Super Power ... **7/6**
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The world's best Transformers at the price.
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Marconi, Mullard, Cossor, Osram, **10/6**. Power, **12/6**. S.P., **15/-**. S.G., **22/6**. Pentode, **25/-**. Sets of valves for all Cossor, Mullard, and Osram kits of parts, etc.

SPEAKERS, etc.
Blue Spot Unit, 66K, **25/-**; Chassis, **12/6**; Do. Major, **15/-**; B.T.H. Chassis, **12/-**; Unit, **15/-**; Brown's Vee Unit, **25/-**; Chassis, **15/-**; Amplion Cone, **21/-**; A.C.40, **83**; A.R.9 Horn, **27/6**; Celestion C10, **75/-**; Marconi Octagon, **30/-**; B.T.H. C.2, **37/6**; Blue Spot 49, **£2 2s.**

CLIMAX H.T. UNITS
The Climax improved H.T. Unit, D.C. Model **34/-**

ECKO UNITS
D.C. **29/6**, **39/6**; A.C. **39/6** upwards. Good stocks.

WATES' VOLTMETER
(3 in 1)
Readings: 0-150 volts; 0-6 volts; 0-30 milliamps. Res., 5,000 ohms. **8/6**

LISSEN POWER PENTODE
A MARVELLOUS VALVE
Output 7 m/a. 100-v. H.T. only **17/6**
Personally recommended

PARMEKO CHOKES, ETC.

H.T. BATTERIES
1/- P. & Post (120-v. free). SIEMENS. 60-v., 8/-; 100-v., 13/-; Power, 60-v., 13/6; 100-v., 22/6. EVEREADY.—60-v., 7/-; 66-v., 7/6; 99-v., 11/3; 120-v., 14/-; Pop Power, 63-v., 13/6; 100-v., P., 24/-, 120-v. P., 27/6. Recommends.—60-v., 5/8; 100-v., 9/6. Fully guaranteed. HELLESEN.—60-v., 10/6; 99-v., 18/-.

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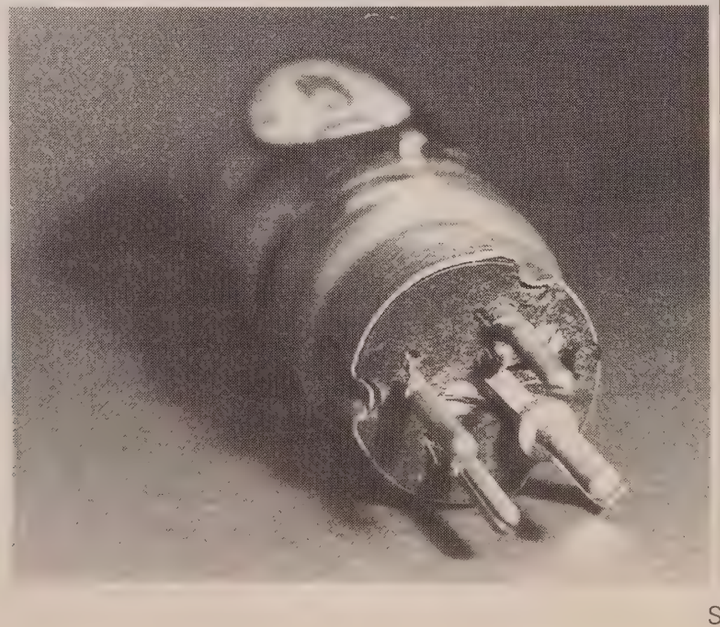
(2 VOLTS)

TUNING UNITS
R.-I. Aperiodic 25/-
British General 14/6
Bulgin "A" - 15/-
Wearite - - 15/-

Typical advert for radio equipment during the period discussed in the article.



The base of the Nelson Multi Valve.

but, as far as I know, was never copied by any of the main manufacturers.

Examine the photo of the base of the valve, and it will be seen that two bent brass strips were located on one of the filament pins,tightened after adjustment by a small knurled disc. These strips could move in an arc to cover the heads of three brass screws, located in the base, and connected internally to three separate filaments. Burn out one and presto!, another was brought into circuit by moving the strips to the next screw head, but wait, there's more!

Instant Power Value

By using the two brass strips to bring into circuit two filaments at once - an instant 'power valve'. The operational characteristics were unthinkable, but then only real experts knew anything about performance data anyway.

I personally purchase these valves from a large radio components shop called Hayes in Trafalgar Street, Brighton, date about 1928. I can visualise it now. As well as the shop windows being packed with masses of components, it was common practice to also cover the outside of the shops with boxes and pyramids of items for sale (thieving must have been unheard of in those days).

These Nelson Valves were packed **loose**! (no boxes) into a large Tea Chest in the shop doorway, complete with a price ticket showing 61/2d for two. My pocket money, when I was lucky enough to get it, was one and sixpence a week, so I took a gamble and bought two. They worked well in my two valve home-built set, but I could never detect any difference in performance when I switched to two filaments.

I never managed to find out who manufactured these valves, they were definitely British made, and if anyone knows anything about them, I would still be interested to hear. Those were the days..... ■

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Very high prices paid for ENIGMA Cipher machines.

If you have any old octal-or-older valve equipment including amateur Tx/Rx we might be interested. Equipment must be complete but not necessarily in working order. Unmodified units are preferable.

WE WILL PAY TOP PRICES FOR GOOD EQUIPMENT!

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WANTED: Pre 1975 Wireless, amateur radio and TV books and magazines.

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This extensive volume covers the h.f. spectrum from 2-30MHz and gives details of transmissions outside the amateur bands including details of time schedules, plus comprehensive RTTY details. **Price £7.50 including postage.**

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CLANDESTINE WAREFARE
James Ladd and Keith Melton. This interesting and informative book studies the weapons and equipment employed by The SOE and OSS during WWII. Includes a chapter on radio communications equipment with photos, transceivers etc., with a chapter on collecting military and industrial intelligence, selection, training and sabotage. Large format. Limited number of copies. Brand new. **Published £14.95. Our price £9.95 plus £1.25 p&p.**

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50 YEARS OF WIRELESS DESIGN
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By Anthony Constable. This excellent book retraces the paths of history which culminated in the final appearance of the wireless set as a tangable article. Many early sets are illustrated. Much information is provided for the wireless historian, 167 illustrations including many half tones. Laminated boards. **Brand new £8.50 P&P £1.50**

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Nineteenth Edition. 1987/88. Lists thousands of stations broadcasting in the long, medium and short wave bands, dealing with them by frequency. On choosing a short wave receiver and a guide to listening. 247pp. **Pub Newnes at £6.95. Our price £3.25 P&P £1.25.**

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A listing of 100s of unused/new valves of all types 1925-1975. SAE for list, with your requirements.

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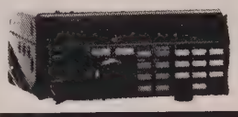

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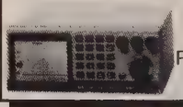

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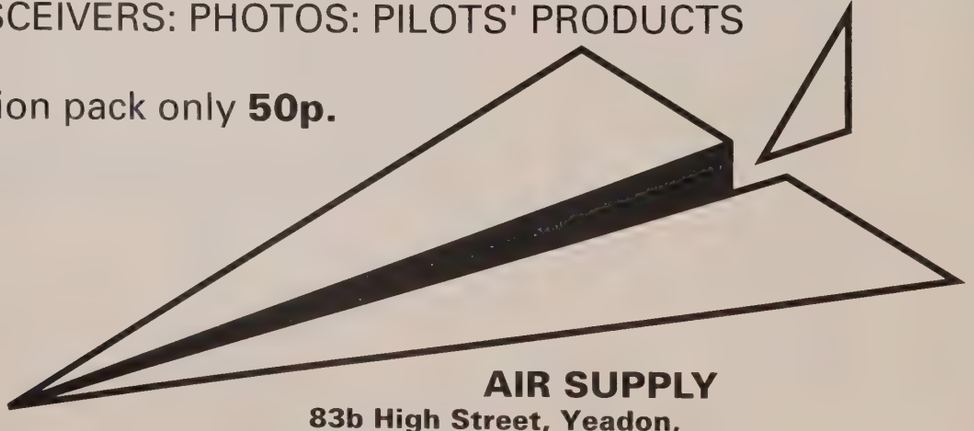

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propagation

by Ron Ham
Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

Despite a hazy sun, **Clive Brook** (Plymouth), using a 2.5in refractor telescope and a home-built projection screen, located 2 sunspot groups on March 28, 3 on April 10, 4 on the 5th & 20th and 5 on the 15th & 16th. In Bristol, Ted Waring counted 14 sunspots on March 28 and 17 on April 8. In Edinburgh, **Ron Livesey**, with his 2.5in refractor and 4in projection screen, identified 4 active areas on the sun's disc on April 8, 5 on days 3, 5, 6, 15, 17 & 21, 6 on days 2, 4, 7, 13, 14, 18 & 19 and 7 on the 28th.

The progress of the large group that crossed the sun's central meridian in mid-April, **Figs. 1 and 2**, was observed and drawn by **Patrick Moore** (Selsey) at 1130 on the 13th and at 0903 on the 16th, respectively.

Cmdr Henry Hatfield (Sevenoaks) saw 4 groups, 16 filaments and 4 quiescent prominences on the sun with his spectrohelioscope around noon on the 4th. Later in the month he saw 2gps, 16fls, 10qps, a plage and a faint 'sprouty' prominence at 1345 on the 10th; 5gps, 16fls, 6qps ('one a large hedgerow') at 1305 on the 11th; 4gps, 23fls and 8qps (one group 'almost flaring') on the 12th; 2gps, 14fls and 8qps at 1024 on the 21st and 2gps, 10fls and 11qps at 1043 on the 28th. His observations were spoilt by 'high thick haze' on the 13th and hampered by 'some high cloud' on the 21st. Henry's radio telescopes recorded individual bursts of solar noise at 136 and 1297MHz on days 2, 11 and 20.

A high background noise level was reported by **Fred Pallant G3RNM** (Storrington) at 0805 on April 17 and **Ern Warwick** (Plymouth) at 1720 on the 14th, 1130, 1320 and 1720 on the 15th, around 1700 on the 16th, 19th and 20th and 0730 on the 30th. Ern also reported 'fast-fading' on the 14MHz signals from the beacons KH60/B on the 12th-14th, 22nd, 26th, 27th and 30th, W6WX on the 13th and 22nd, ZS6DN/B on the 25th and 'echos' on the 28MHz signals from the beacons WA4DJS on days 5, 6, 8 and 9; W3VD on the 14th and 15th and ZS5VHF and Z21ANB on the 13th.

Auroral

Ron Livesey, the auroral co-ordinator for the British Astronomical Association, received visual reports of aurora described as 'glow or unspecified light' for the overnight period on April 2/3, 6/7, 7/8, 8/9, 9/10, 11/12, 13/14 (yellow and white), 15/16, 17/18, 18/19 and 28/29, from several observers mainly in Scotland and aboard the Ocean Weather Ship, *Cumulus*, stationed in the mid-Atlantic. Other effects such as 'quiet arc or band' were seen on 2/3, 3/4 and 7/8, 'ray structures' on 2/3 and 'active, pulsating or flaming forms' on 3/4 and 4/5. Ron warns all northern observers to 'be on your guard against confusing twilight for auroral glow in summer'.

Doug Smillie (Wishaw) logged tone-A signals from 1643 to 1735 on the 4th, 1425 to 1900 on the 29th and 1500 to 1730 on the 30th. Ern Warwick heard weak auroral warnings given by the German beacon DK0WCY on 10.144MHz between 1730 and 1830 on the 28th and 1540 to 1730 on the 30th and a strong alert from 1640 to 1730 on the 29th.

Magnetic

The various types of magnetometer used by Tony **Hopwood** (Worcester), **Karl Lewis** (Saltash), Ron Livesey and Doug Smillie, between them found the most active days were April 4, 5, 14, 18 and 28.

Propagation Beacons

First, my thanks to **Chris van den Berg** (The Hague), **Gordon Foote** (Abingdon), Henry Hatfield, **Ted Owen** (Maldon), Fred Pallant, Ted Waring and Ern Warwick for their 28MHz beacon logs. From these reports, I compiled the monthly chart of the beacon signals heard, **Fig. 3**. between March 26 and April 25.

Gordon Foote has now heard KF4MS on 28.2693, 28.2704 and 28.3003MHz. He logged a 'very clear signal - but spacing and rhythm not good' at 1420 and 1531 respectively on April 12 and 14 from T4US/U on 28.207MHz. Ern Warwick copied 'VVV de KF4MS/BCN QSL SASE to KF4MS PO BOX 21247 St. PETERSBURG FL 33742' on 28.271MHz and 'VVV de ND9X/B FOREST VIEW, ILL. PSE QSL RST DE ND9X/B' on 28.205MHz.

Ern Warwick also heard signals almost daily from PY2AMI on 18.100MHz; OH2B, JA2IGY, ZS6DN/B, 4U1UN/B and 4XTU/B on 14.100MHz and DK0WCY on 10.144MHz. Although less frequently, he also copied signals from PY2AMI on 24.931MHz and KH60/B and W6WX on 14.100MHz.

Fig. 1.

Fig. 2.

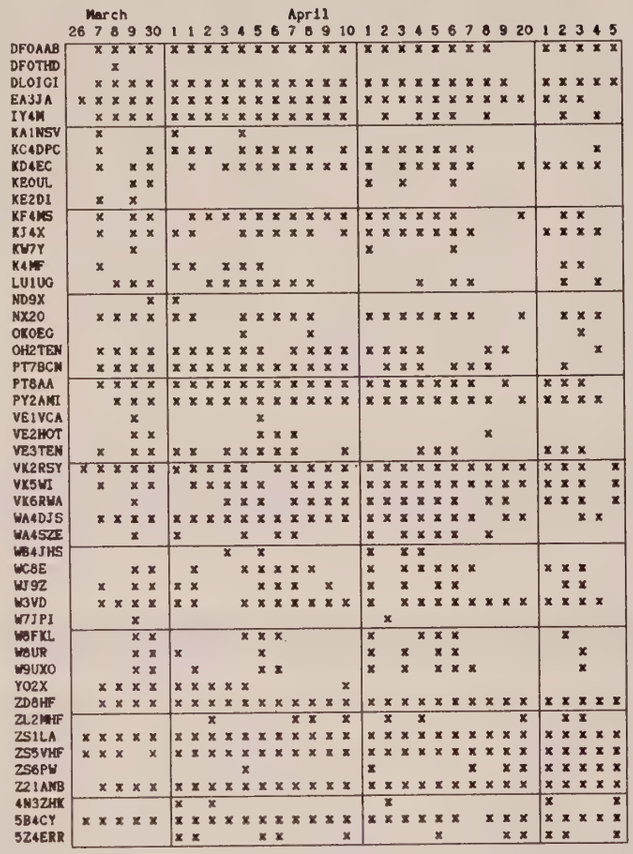

Fig. 3.

Tropospheric

The daily variations in atmospheric pressure for the period March 26 to April 25 can be seen in my 'DXTV' column elsewhere in this issue. Around 1900 on March 27, **George Garden** (Edinburgh) was on the coast road from Montrose to Lawrencekirk, knowing the pressure was high he checked Band II (87.5 to 106MHz) on his car radio and found conditions very good. "I was amazed at the strength of IBA Metro Radio from the Newcastle area, as good as a local", said George. He left the set tuned to the same spot and tried again on the road to Johnshaven village, while the pressure was falling on the 29th. Then he heard the signal from Metro Radio coming in waves 'from very strong to nothing', a faint ident from IBA Radio Tes and BBC Radio Newcastle was 'romping in'.

Ionospheric 'F2'

In February and March, **Lt. Col. Rana Roy** (Meerut, India) received many unidentifiable TV signals, in Band I (46-68MHz), via several 'F2' disturbances. These pictures, which have travelled far beyond their intended range, usually appear as smeary, distorted or multiple images as shown in **Fig. 4**, which Rana received from SE Asia on 48.25MHz at 1120 on the 3rd.

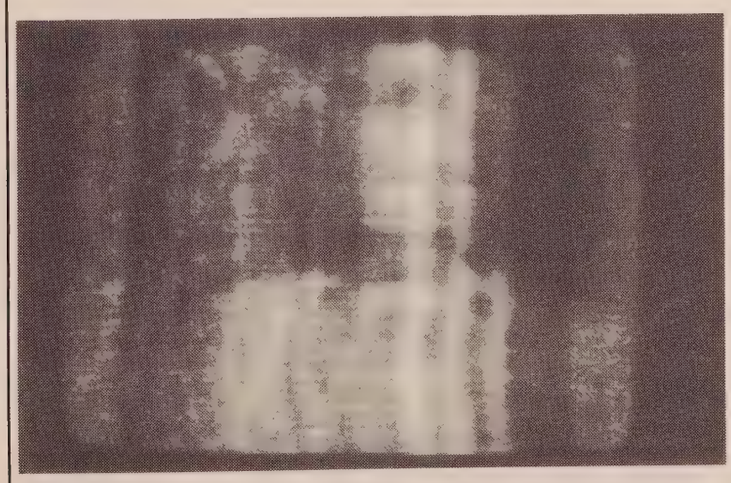

Fig. 4.

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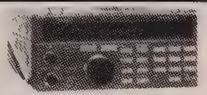

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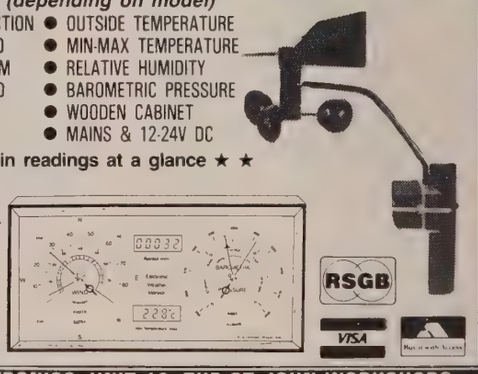

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The new h.f. marine band chanellising system takes effect from July 1. As the lists are so long, if you would like a full set, send a first class stamp and your name and address to the Editorial Office in Poole.

You Write

My recent comments on spy stations has prompted a letter from **Don Schimmel** of the American magazine *Popular Communications* (it shows how wide *SWM's* readership is). Don has made a considerable study of these stations and recounts that numbered messages were transmitted for the KGB agent Gordon Lonsdale in London. If the message was real, his three figure callsign would include the number '1'. If it was a dummy then the '1' was missing.

Simon Mason of Hull has sent me not just lists but also a cassette of a lot of numbers stations. He sent a large amount of information and I will try and go over the subject again in full in the near future.

Fisheries Protection

Terry Ford of Sheffield has asked about the 'Cosmos' network which appears on 4.182, 4.463, 5.472, 5.750, 6.745, 6.647 and 11.680MHz. Stations heard are 'Cosmos Control', 'Maff base' and 'Watchdog'. Terry knows that Maff base is the Ministry of Agriculture Fisheries and Food in London and that 'Watchdog' is one of their aircraft but what is 'Cosmos control'? MAFF actually operate several aircraft, or did. Delta Hotel is a Friendship F-27, Alpha November is a Titan, Bravo is a Piper Aztec and there is also a Dornier 228-200. They also operate an Islander, possibly Watchdog 93 or 94. I am not certain which aircraft are fitted with h.f. nor who operates 'Cosmos control'. I suspect it could be the Royal Navy because these aircraft liaise closely with fisheries protection vessels.

Military

Cliff Stapleton of Torquay rode the air waves on his trusty R1000 and used a random long wire to lasso what appears to have been a number of MARS (Military Affiliated Radio System) stations. This is an informal network available to US service personnel which is often used to make contact back to the USA. Cliff heard several stations operating from the Saudi area. The army were on 20.680 and 20.940MHz and the navy on 20.937, 20.994 and 14.443MHz. **Keith Mayhew** of Mansfield has logged a new MARS station operating on 13.927MHz. with the call sign AFI IMH Delta. The same net has also been spotted by **Paul H.** of Newbury who says it is an air force net co-ordinated by CUW on Lajes (Azores).

Paul could have filled the column for me this month having sent in several sheets of information. He says 6.761MHz appears to have been used as a USAF calling channel during the Gulf War with primary operation on 11.226MHz (X-905) and secondary on 9.017MHz (X-904). Paul thinks two new channel identifiers are X-908 on 17.992MHz and W-112 on 18.397MHz. He adds that MAC (Military Airlift Command) aircraft passing through Upper Heyford have been using 28.465MHz as a discreet channel (amateur 28MHz band). On the eve of the Gulf War Paul believes he may have heard the crucial war message to all MAC aircraft. At 2015 hours on 11.176MHz he heard the call "Message for all MAC aircraft reads SNBHG4BJLIC5JZALXR7RBTPZF NVVYM3SCPFNWSL". It is unusual for a message to be transmitted to all MAC aircraft and I believe he is right in thinking that this was a significant broadcast.

Paul's other military log entries over the last year have included much v.i.p. traffic including US senators using Croughton on 6.750MHz for phone patching whilst *en-route* to Egypt, *SAM 2700, Air Force One* and *Mystic Star* on 11.052MHz 'phone patching 'Andrews VIP' to discuss Mrs Bush's trip to Paris. *SAM 2700* is a VC-137C based at Andrews and it appears to accompany *Air Force One* (the presidential 747) on its trips abroad. Paul's lists are most detailed and he obviously has a good nose for seeking out interesting transmissions. He also provides proof that you do not need massive aerial farms because he used a very compact Datong AD270 active antenna.

Mr P. Holmes of Grimsby uses a Kenwood R5000, Global a.t.u., Datong FL3 filter, half size G5RV and a 22m dipole. That collection netted 'Hurdy Gurdy' 1 and 2 calling 'Blue Star' on 8.972MHz and Lahr in Germany calling AWAC. 'Magic' on 5.691MHz where he later heard Lahr calling 'Hotel Alpha' and 'Hotel Echo' which he thinks may be in Turkey. The same stations were also called on 11.270MHz and lately the USAF have used 'Hotel' as a prefix for temporary air bases. Magic 74, 78 and 79 were heard using 11.270 as well and they also cropped up on 6.762MHz.

Graham T. of Harlington logged the French Navy (callsign FMN 036) using u.s.b. on 8.972MHz and the German Air Force (callsign GAF 999) getting weather reports from Koln/Bonn on 11.243MHz. On 11.228MHz he heard three USAF Hercules mid-air refuelling a flight of MH-53s near Sicily. Later, they all changed to 6.983MHz. Graham heard a USAF aircraft departing Torrejon calling on 11.176MHz and the conversation that followed would appear to confirm that Westover Air Force Base in Massachusetts regularly uses 8.498MHz and the callsign 'Casino Royale'.

Closer to home Graham reports that RAF Woodbridge (near Yarmouth) uses the callsign 'Woody' and has 3.166, 11.180, 11.228 and 15.738MHz available although they tend to 'Go Green' which means the speech is scrambled after initial contact. On 11.243MHz on April 12 Graham heard a US Navy P-3 Orion maritime patrol aircraft with the callsign 'Ranger 23' (based at Rota in Spain) declare a Mayday. SAC (Strategic Air Command) stations 'Ninja control', 'Lone Ace' and 'Polar game' tried to make contact but nothing was heard. Then an hour later the Orion re-appeared and the crew said they were alright.

Space

Chris Durkin of Ormskirk has picked up re-broadcasts of a NASA Shuttle. He heard W5RRR at the Johnson Space Centre in Houston on 20.186MHz on April 28. Contact was with the *Atlantis* Shuttle and Chris got a QSL card back within 2 weeks.

Keith Mayhew says that the American magazine *Monitoring Times* has reported that the latest Shuttles are not carrying h.f. equipment, which puzzles me because I was not aware that any of them ever did. I wonder if this was a misprint for u.h.f. as they seem to rarely use the 250MHz band now that their tracking data and relay satellites (TDRS) are all up and working.

The last word goes to another American reader. **Ozzie Osband** of Tampa has written to say that the mystery letters 'ETR' after some of the space frequencies given earlier this year stand for Eastern Test Range, which is operated by the US Air Force at Cape Canaveral. Ozzie also mentions that if you are in the area during a launch the shuttle audio is re-broadcast on 146.940MHz.

Good listening.

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bandscan

EUROPE
Peter Shore, c/o *SWM* Editorial Office.

With the Gulf War now a fading memory for people everywhere but the Middle East, life is slowly getting back to normal on the airwaves. Iraqi Radio is repairing its transmission facilities and frequency usage is returning to its pre-war state. Currently the old 15.605MHz channel is on the air in parallel with 3.98 and 4.60MHz. Medium wave transmitters are also on the air, noted on a recent Middle Eastern visit on up to ten channels including 558, 603, 684, 756, 846, 909, 1053, 1377 and 1385kHz.

There is no sign of Kuwait on short wave yet, but I'm scanning the bands, seeking the first recording of Radio Kuwait's Arabic or English services.

The Geneva-based Red Cross Broadcasting Service which increased its transmissions during the conflict, has now returned to its monthly format with programmes to Europe on Sundays at 1100 and Mondays at 1700. The dates for transmissions in the next few months are Sunday June 30/ Monday July 1, July 28/29, August 25/ 26. All European broadcasts are on 7.21MHz.

Cutbacks Around the World

Readers will have noted that shortly after the last 'Bandscan Europe' appeared in the April edition of *SWM*, Radio Canada International suffered the fate it all but expected. On March 22, French and English programmes were scrapped, replaced by relays of the CBC's domestic output. There are now more English programmes beamed to Europe than when RCI proper was in operation and the times and frequencies for these are:
0200-0229 on 9.65, 7.27, 7.23, 6.125 & 6.035MHz
0515-0559 on 17.84, 11.755, 9.75, 7.295, 6.15 & 6.05MHz
1400-1429 on 21.545, 17.82, 17.795, 15.235, 15.315, 15.305 & 11.935MHz
1500-1529 on 21.545, 17.82, 15.325, 15.305 & 11.935MHz
1600-1629 on 21.545, 17.82, 15.325, 15.305 & 11.9359MHz
1700-1759 on 21.545, 17.82, 15.325, 9.555 & 7.235MHz
1900-1929 on 21.675, 17.875, 15.325, 13.65, 7.235 & 5.995MHz
1930-1959 on 21.675, 17.875, 15.325, 13.65, 9.67 & 6.17MHz
2100-2159 on 17.875 & 15.325MHz

The transmission at 1500 includes an RCI-originated news bulletin. Relays continue via the BBC transmitting site at Daventry in the Midlands, whilst BBC World Service programmes are still being relayed by the Sackville station in Canada.

Israel Radio's external service has also been cut. On June 1, English and French were reduced in duration and Portuguese, Romanian and Hungarian transmissions were dropped. These cuts enable Israel Radio to pump more funds into stations for new immigrants, round-the-clock broadcasting from Network Two and curiously regional road safety stations.

The French language international service of RTBF in Brussels stopped on March 10. Then it started again, with a relay of the Network 1 domestic French service. The broadcasts are at 0530-0630 on 17.68 and 7.14, at 1100-1130 on 25.645 and 9.925 and at 1600-1715 on 17.675 and 15.54MHz

Silent Night in Latin

Radio Finland has stopped European night-time broadcasts, closing down now at 2200 and silent until 0300UTC. The medium and long wave senders on 558, 963 and 252kHz will be off the air during those dark hours, along with 6.12MHz on short wave. Latin is an unusual language for a north European station to broadcast, but Finland, being a country that wants to be different, transmits a short Latin news bulletin in all English broadcasts on Sundays. English to Europe is heard on 6.12MHz, at 0630, 1400, 1830, 1955 and 2130.

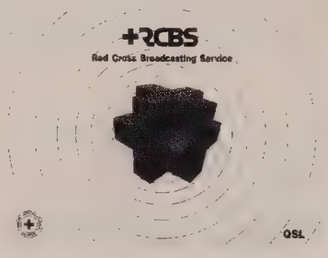
WARC 92

In the 'Bandscan Australia' last month, Greg Baker looked at matters affecting down-under in connection with the World Administrative Radio Conference next February. The Conference will look at reallocation in the h.f. spectrum, including increases in the short wave broadcast bands and for various other services including fixed and satellite communications. One allocation to be decided will be that for BSS-sound, or the Broadcasting Satellite Service for d.b.s. radio.

Technically 1.5GHz is favoured, and RadioSat, which I mentioned in the April column wants to see this go ahead. But some European countries favour an allocation at 2.5GHz to protect fixed services and military applications which presently use the 1.5GHz frequency range. Watch this space.

Another aspect of discussions may be the early adoption of single side band transmission for short wave broadcasting and a number of stations are carrying out s.s.b. tests in preparation for the Conference. Radio Netherlands is testing to North America on 15.56MHz u.s.b. at 0030 in compatible s.s.b. mode with 6dB carrier reduction. Radio Norway has a number of s.s.b. channels in operation. English on s.s.b. is at 1200 on 21.695 and 17.82MHz, 1500 on 17.79MHz, 1600 on 21.705MHz, 1800 on 17.755MHz and 1900 on 17.73MHz. English broadcasts are on Saturdays and Sundays only.

As the Conference approaches, *SWM* will keep you up-to-date with the latest developments, and look at which countries are adopting what position. I'll also look at where the short wave broadcast band expansions are likely to occur.



France plans a French World Service with as much punch as the BBC World Service in English. Radio France International has got the go ahead from the French government to increase the number of high powered transmitters at its French station at Allouis-Issodun to 24. This will involve the replacement of twelve 100kW senders already there with 500kW. The RFI relay station at Montsinery in French Guiana will have a fifth 500kW transmitter and a new station will be built, with three 500kW transmitters, in Djibuti, West Africa. All this work will be completed by 1997.

Deutshlandfunk in Cologne is now receiving reception reports from UK listeners who are tuning in to the satellite transmissions from the station. DLF uses Astra, transponder 6 on the SAT 1 audio sub carrier at 7.74MHz 1815-1900UTC in parallel with the medium wave channel of 1.269MHz seven days a week. Some correspondents to the station have pointed out that satellite dealers in the UK consider anyone asking about services other than BSkyB on Astra very strange. The satellite revolution has not yet been all encompassing! Meanwhile DLF has announced that in the autumn a brand new German language course will start. It will be set in a small hotel called Hotel Europa, and it will be called *Deutsch - Warum nicht? (German - Why Not?)*. The course will deal with all important aspects of the language one needs when visiting Germany, or meeting Germans here in Britain. There is a new modern textbook to accompany the course that is available from the station free of charge. Write to German - Why Not, Deutschlandfunk - English Service, PO Box 51 06 40, W-5000 Cologne 50, Germany. Services from DLF's sister station, Deutsche Welle, can be received on Astra 19.2E Transponder 2 at 11.229GHz on sub carrier 7.56MHz.

Into the USSR

Frequency changes have affected Radio Vilnius with the 2300UTC transmission noted on 11.77, 11.86, 15.18, 17.69 and 17.72 from relay sites outside Lithuania in addition to the Lithuanian transmitter on 9.71MHz. The English programme of Radio Alma Ata is at 2130 until 2200 on 3.955, 4.40, 5.035, 5.26, 5.96, 5.97, 9.505, 15.215, 15.315, 15.385, 17.605, 17.715 and 17.73MHz.

Scandinavian Literature

Radio Sweden has released the latest edition of *Communications in Space* produced by George Wood of the bi-monthly *Sweden Calling DXers*. It contains a run down on what's flying at present, with frequencies to try for listening to the world in the GHz bands. There's also the new edition 4.0 of *The DXers Guide to DXing* that tells you all sorts of things which you never knew your computer could possibly do for you in the radio shack. This costs £3.00 from Radio Sweden, S-105 10 Stockholm, Sweden and the space booklet is priced at £1.00. And, of course, you'll want to wear a Radio Sweden T-shirt whilst reading these tomes. The shirts are available in sizes from small to XXL and cost £9.00. Send your orders with international money order, Eurocheque or by bank transfer to Swedish Post Giro account 30690-2.

Radio Sweden altered the timings of English programmes with the clock changes in the Spring. Transmissions to Europe are now at 1700 on 1.179, 6.065 and 9.615MHz; 1830 on 6.065 and 15.27MHz; 1930 on 1.179, 6.065 and 9.655MHz; 2030 on 6.065MHz; 2200 on 1.179 and 6.065MHz and 2330 on 1.179MHz.

The 1991 edition of the Danish Shortwave Clubs International *Tropical Bands Survey* has just been published. Compiled by Julian Anderson in Argentina, the 24-page book lists all currently active stations between 2.0 and 5.90MHz listed by frequency. Power and transmission times are included for each entry. This publication costs 7IRCs or DKr30 for surface delivery from DSWCI, c/o Bent Nielsen, Betty Nansens Alle 49, 1 tv., DK-2000 Frederiksberg, Denmark.

Spy Numbers

Seemingly back in business are those secret numbers stations. They have been noted recently on a number of channels between 1700 and 2400 including 4.765, 7.375, 3.417 and 4.88MHz. Where on earth are they coming from these days? With Europe uniting east and west, and the Soviet Union in a certain amount of domestic and international disarray, could it be that the CIA is hard at work? Any theories and your own loggings will be interesting.

MARTIN LYNCH

G4HKS

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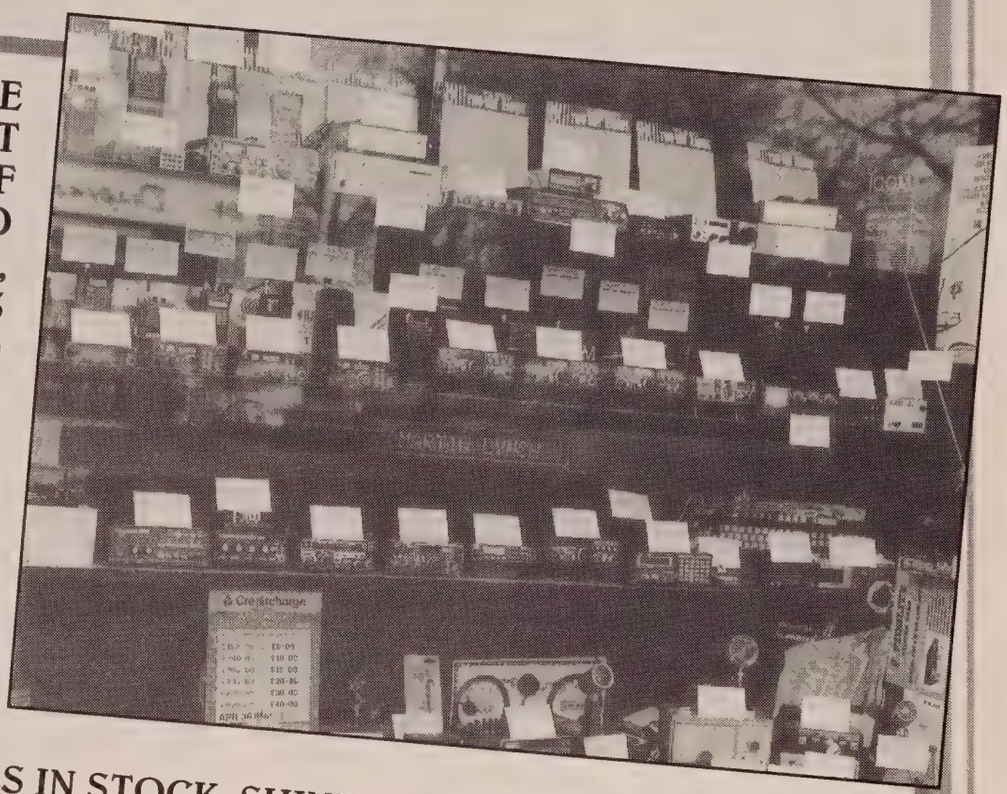

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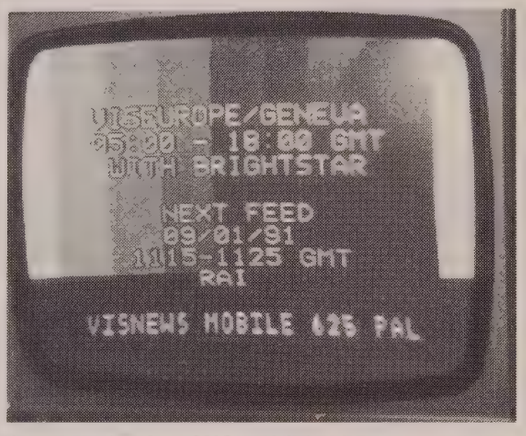
satellite tv news

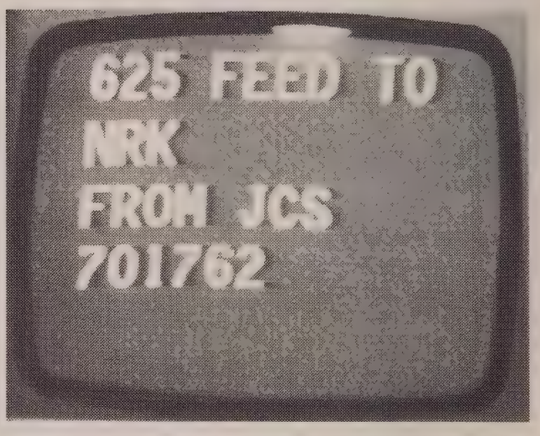
Roger Bunney, 33 Cherville Street, Romsey, Hants SO51 8FB

Tandy is expanding its involvement in the satellite field. Though they currently retail Astra receiving systems, their main office in the USA is installing the latest state-of-the-art satellite communications system atop their office centre at Fort Worth. Operating in C Band, the facilities will include its own satellite uplinking equipment (the signal may well be scrambled) and a TV studio. The centre will transmit broadcast quality programming and marketing data, etc., to its many retail, manufacturing and research plants across North America and, where possible, into other countries.

I notice in the American publication *Popular Communication* that Shuttle TV downlinking is at 2.214GHz should you have the equipment to receive signals -and incidentally voice and telemetry is carried at 2.250 and 2.287GHz. One often reads and hears of the Russian space launches from their 'cosmodrome' at Baikonur. Journalist Simon Baker has recently reported in the press of his visit to the site, which is actually 320km further South at Tyuratam, on the flat plains of Kazakhstan - the main town serving the workforce is Leninsk.



An example of an SNG multiple access news feed. Visnews are using their mobile unit (in Geneva) early January 91, feeding the Italian TV RAI, Brightstar are also carrying the feed over their leased circuits (Brightstar have part ownership in Visnews).



A news feed seen over Eutelsat I F5 10°E during the Gulf War, Jerusalem feeding NRK Norway.

Scansat

One reader, **Alex Gordon** works at Skansat, the cable TV production facility serving Norway, Sweden and Denmark with dedicated programming to each region, and TV1000 - a general Scandinavian programme - 4 services in all. Operating from West Drayton, their programme outputs are conveyed to the London Teleport (North Woolwich) via fibre optic links - and downlink over Astra 1A, 1B, at 19.2°E, and Intelsat VI F4 at 27.5°W, though using D2 MAC on all programme feeds. Frequent use is made of their mobile satellite uplink unit that can be seen over Eutelsat craft at 7 and 13°E - with an identification 'SWE-2'. Unfortunately their mobile unit 'Tele-2' has now converted to encrypted D2 MAC so reception from this unit will be all but impossible! Scansat often use permanent earth stations at Nitterdal, near Oslo and Agesta - Stockholm for programme feeds and contributions into their main cable services. Iransat (known in Iran as Project Zohreh) is slowly evolving and tenders are now awaited for Iran's first communications satellite to be launched by 1996 and self-funded. The bird is planned to carry 11 transponders and will cost around $14 billion. It's likely the satellite will be European manufactured.

Spanish Re-alignment

With Galavision quitting its Eutelsat II F1 13°E transponder later this year, the Spanish are preparing to re-align their dishes onto the PanAmSat PAS-1 bird slotted at 45°W. Currently, Gala are promoting the new programme downlink. The European Broadcasting Union (EBU) have already booked three transponders on Eutelsat II F4 which will orbit at 36°E early 1993. SIS (Satellite Information Services) is the organisation that provides the bookies with their continuous racing TV service during the day via a downlink on Intelsat VI F4 27°W - that's what the dishes are used for that are seen on many bookies premises. The service - which downlinks in B MAC - up to now has not been available to the general public - but from now SIS can be received by hotels, pubs, stables and private individuals (betting types studying form) for an annual fee of over £4000 (includes all equipment, addressable decoder by Scientific-Atlantic and installation). There will be a 2 hour compilation each evening that is available at a reduced subscription level.

SIS regularly link their outside broadcast feeds over Intelsat V F2 at 21.5°W - an elderly craft now in inclined orbit - unfortunately for us enthusiasts, SIS have B MACed these links. These downlinks presented a challenge due to the variable signal strength ranging from non existent to strong over several hours. Look in Ku band at 11.135 and 11.175GHz, horizontal.

Higher Performance LNB

An English company 'Satellites Direct' have introduced a small unit that enables use of an external magnetic polariser and retrofit LNB in dishes that were designed to use integrated LNB/Polariser head units (such as Amstrad/Marconi units - switching polarisation by adjusting applied voltage up the coaxial feeder). The PCMU-1 connects to the Amstrad receiver but features two outputs, one via an F socket to the new (higher performance) LNB and twin wire connections to a standard magnetic polariser. The unit costs £55 +£3P&P from Satellites Direct, PO Box 354, Hailsham, Sussex BN27 4AS (phone + FAX (0323) 848585) - enquiries include an s.a.e. I personally do not know this company but was advised of their world-wide postal service of satellite components by reader **Nicholas Early**, Victoria, Australia.

Eurosport, the English based sports channel carried over both Astra 1A and Eutelsat II F1 13 East ceased to operate as from May 6, due mainly to it's contractual agreements between the EBU and News International, and strong objections by Screensport suggesting a breach of EEC regulations. Though efforts were made to sell part of Eurosport, the channel closed down early May and at the time of writing is off the air.

Reception News

Yugoslavia has appeared with a satellite programme downlink over Eutelsat I F4 at 11.178GHz horizontal during the mid/late evenings including news in English around 2200 with close down approx. 2300 - programme languages at other times are local. A corner logo with a 'K' inside an ellipse features during the programmes, at termination of the evenings' fare the familiar PM5534 test card with 'JRT BGRD' identification is shown. Also seen over 7°E during May has been various BAE (British Aerospace) sporting items such as 'Sportscast' 11.63GHz horizontal during afternoons, and BAE weekend football feeds on the same bird at 11.67GHz horizontal.

The Guadalajara Spanish Earth station has been carrying a revised identification from early May 'CCS GUADALAJ' on both 7 and 10°E Eutelsats. Further on the SIS horse racing feeds over Intelsat 21.5°W, of the two regular frequencies in use, 11.135 and 11.175GHz, the latter is now carried in B MAC - unless you have access to a B MAC decoder or able to use a sync inserter, the signals are completely undecipherable.

TV10 the Scandinavian cable feed carried over Intelsat VA F12 10.96GHz horizontal is now carried in D MAC during programme hours. The only unusual reception noted May 12 was an OB feed from the Cannes Film Festival over Eutelsat II F1 at 12.52GHz (the VisEurope frequency). With European Broadcasting Union feeds now transferred from the ailing Eutelsat 1 F1 bird at 16°E to I F5 at 21°E so there has been an upsurge in reception (I F1 was in widely inclined orbit towards the end and reception quality varied widely). Observation on this craft will see a variety of signal sources, recently JTV Amman, Magic Box -Turkey and an unidentified test card with 'ALBS' identification have been seen.

Sync Stripping

Most circuit feeds use sound in syncs and as such the picture is very jumpy (the digital sound information within the syncs produces variable sync locking). the only means of stabilising pictures is to strip off the syncs from the incoming signal and insert local syncs, then phase up the locally inserted syncs with the picture for correct lock and a steady picture will be displayed. Since sync stripping is processed at baseband video, so the output from the sync inserter is also at video, this is then fed into the video input of a TV monitor/v.c.r. or via a u.h.f. modulator with output say at Ch. 36, etc., (not on the same u.h.f. channel output of the satellite tuner) and connect back into the satellite tuner by the diplexing arrangements to the rear of the tuner. If any readers can indicate a source of available sync inserters then I'd like to know!

amateur bands round-up

Paul Essery GW3KFE
PO Box 4, Newtown, Powys SY16 1ZZ

Hello again! Somewhat belatedly (mid-May) Spring seems to have sprung and the 'antenna farming' (for the moment at least) is pretty up-to-date, thanks to aid from GW7DJL and s.w.l. Mark.

After the super conditions earlier in the year, things took a comparative nosedive. The week just past has seen things pretty well back to scratch, but with a possible fall-away again later this week.

For a weekly update on what's what you can consult Wireless Line on (0898) 654632 and listen to the RSGB Sunday morning news bulletins, which are broadcast on the 3.5, 7 and 144MHz bands. Yet another source of forthcoming events is the RSGB's *DX News Sheet*, edited by G4DYO, and available on an annual subscription from RSGB, Lambda House, Cranborne Road, Potters Bar, Herts. Since most of the really interesting happenings on the bands occur at pretty short notice, my own long lead time prevents me from giving you much advance news in the column.

I have mentioned the Islands On the Air activity before. I have a letter from **Conor McGlynn EI6HF** indicating that the Island-Hoppers DX Group will be activating the Great Blasket Island between July 20-27. The spot frequencies to be used (give or take the QRM, of course) will be 1.985, 3.785, 7.085, 14.285, 21.385, 28.585 144.260 and 432.220 for sure plus somewhere on four metres and - if permission is granted - 50.150MHz. QSLs to go direct only via EI3BA.

Talking of awards, Mansfield Club put out a nice one called the Sherwood Forest Award. You have to score 30 points, 5 by way of hearing the club stations G3GQC and/or G1GQC, 2 for any Mansfield club member, and one for any other licensed amateur in the county of Nottinghamshire. All bands and modes permissible, but each station may be entered into the log only once. Your copy log entries to be certified by two other amateurs and sent, with £2, $4 or 7 IRCs to the Awards Manager, GW Lowe G0NRA, 25 Manor House Court, Kirkby in Ashfield, Notts NG17 8LH, who will also send a membership list and answer any queries so long as you send him an s.a.e.

Letters

Nice to see some new names. **Ron Galliers** lives in London N1 and has a Philips D2935, fed through a bent 30m wire and matched by a Lake a.t.u., the earth consists of a couple of 12m lengths of wire under the lawn. Ron mentioned a session in the contest on May 5 when he tuned around 14.150-14.185MHz and between 1830-1945 noted W9RM and a lot of assorted Europeans. Of course the Yank Phone band starts at 14.150, but only for the Extra Class ops, while Advanced start at 14.175, and the Generals begin at 14.225; since most c.w. stops at 14.1 this leaves a relatively free area for non-USA QSOs.

Late that evening, 7MHz yielded 4Z4ZC at 2310, and on 14.160 ten minutes later, Ron noted VE3ITA, VK6PY, N4RLT, LU1HLH, 9K2KS, VE3EBT, WM1O, OE6CLD, YS1EJ, EA1KI, HK1ZF, C31AK, GM4VXA, RO4OE, VE8CB, KB1QQ, W3KH, 3A2LU, KW9Q, VO1TX, YV1AJ, WB5JHK, WN9P, KG5SC, VE3WHE, N3IEQ, AK9I, AA5AT, KC3M, W2HZ, WY9E, N4KEL/M, TI5RLI, FG4L and YV1KZ - all getting on the list for PY0SK (St Peter and St Paul Rocks), who was not heard. Another notable was the R1AP expedition to Gogland Is (spelt out) in the Baltic where Ron stuck around long enough to log some 42 callers world-wide. However, the *Times Atlas* doesn't show such a place, so I wonder just where this one was.

More Letters

Dennis Shepherd next, from Earl's Shilton who does a lot of listening to Top Band on his FR50B, for which he now has some 41.5m of wire up. On this combo, Dennis reports hearing the Powys Net on 1.932MHz on Tuesday evenings, plus UA2FCC, GM3VMB, GI4OGS and G3KPJ and G3JFA both of whom were on a.m. on 3.5MHz. KN4VE, ZL4BO, 7X2BK, PT7CB, VE2RL, C53GB, VO1NS, K2INA and AD1G came in, while the 28MHz crop included VE8ABF, PY5TAG, JA3MF, SV9AKI, W4KQL, P43WLP, YV2BYT, VP2EY, KP4EHE, VU2ONL, OD5FY, V51E, V29A, TU2YN, VE2FJG, YC0MCA, CX4GL, ZS6DLF, 4W3CO, EL/KC4WCV and FH4EH for Mayotte.

Gerald Bramwell of Swinton found 7MHz yielded the usual crop of Europeans - though I wouldn't have called 1A0KM exactly run-of-the-mill! - plus LU7LAQ, CE3HPE, 4M6O, PR7SSM, CP1CL and 6Y5IC. All the higher bands showed with Ws, VEs, Russians and Europeans of course, leaving us with the DX. 14MHz showed lots of South Americans, VKs, 8P6BC, VP8GD, D44BS, V29A, 9K2YA, 7Z1TS, YBs, HC4L, HK5LEX, 4X6AS, 7X2DG, VP8CEN; on 18 MHz, again S. Americans, plus V2/VE3ODC, JA2NNF, FM5WP, JA1JRK, 7X5VRK, A61AD, A92BE, JA4KGR, EA8ALY and EA8PP. 21MHz was possibly the most productive of all; again lots of W and VE signals, EUs, Russians, South Americans, OD5PL, YC4FT, OD5ZZ, 4X4MS, OD5ET, JA4DUI, 9M8PV, TA8C, JA7BXS, 4X6EJ, HK1PZC, ZS6MAC, HL1IKH, JA1BNL, 9Y4SF, VU2TTC, JE1VTZ, VK2EQD, VP2EY, JM1PPQ, 5N0JRM, JA4CJN, EA8TE, VA2XLT; 24MHz sported the smaller fry plus a larger proportion of VKs, while on 28MHz the DX was all N or S America.

Peter Cain lives in Newcastle-on-Tyne and this time reports for 14, 21, 28MHz. Taking the latter first I see AP2UR, A22AA, A71AA, A92EV, BT80TUA, CN8EC, CO5GV, CP6RP, CX9BY, DU1COO, D68FT, EL2FE, FR5CY, FY5FG, HC5EG, HI8JKA, HL2IVL, HR1KAS, J28NU, J73VE, KB5LRO/KH9, PJ2WG, TG9GI, TI2LCR, TU2XZ, VP8CEX, VS6VO, V29A, V47MB, XT2PS, XX9MD, 3DA0BK, 5N0RJM and 8Q7ZL. The 14MHz list is longer, with AH6EE, A35KB, A41KC, A71CD, CE0DFL, C6ANU, FK8FS, FO5BI, FP5DX, FW8FM, HP1XSO, HP1XWU, JW0GB, JX3EX, J6LB, J88AJ, KB6CC/V63, KG4AR, NP2B, OX3KM, P29KH, P29PL, P40V, ST0DX, S83H, TI2MCL, TR8JH, TU4DP, T30A, VK9NS, VP2EXX, VP2VE, VP8CEN, XEs, XT2BW, ZP5GCV, 1A0KM, 3C1EA, 3X1AU, 3X1SG, 4K2FJL, 4S7SW, 5U7NU, 8P6AE, 9K2MJ and 9M8ST.

Wyn Mainwaring GW8AWT, lives near Llandeilo, he uses an HF-125, running from the battery swiped out of the old VW van, charged by solar power. As for Amateur Radio Clubs, there are several - all an hour's drive away! On the other hand, as Wyn says, to be free of those infernal TV time-base harmonics and mains-borne noise as well is quite a pleasure for the ears!

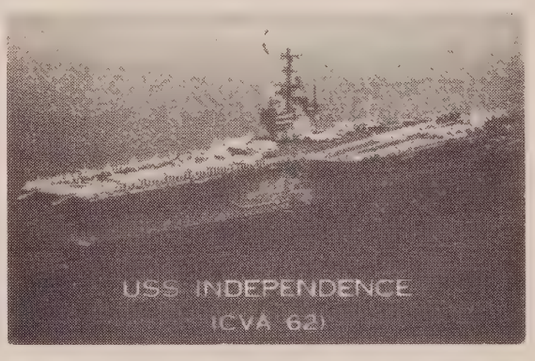
Next we turn to **Bill Williams** in Gloucester to whom I recently had the pleasure of passing on a ZL QSL card. The list is shorter this time as Bill is taking a grip on the Morse for a Novice 'A' ticket - and I hope that once he has the 'feel' of it he will do much more c.w. listening. To return to Bill's list, on 14MHz he mentions J88AJ, KV4FZ, LU7HJM, P40V, V44KAQ, VK2QP, VK3AAO, VK6WC and ZL7MO; while a QSY to the 21 MHz band located DU6JS, D44BS, HK3PRJ, JA7GLB, KL7HQY, NP4U, PP8DA, PZ2AC, ST0DX, VC1JA, VK7NDO, VP2MR, VP9MM, YC1YMN, YV5JM, ZD8Z, ZS4AE, and ZV4B. The Williams rig, which is FRG-7700, FRT-7700 a.t.u. and up aloft a half-sized G5RV was then turned to 28MHz where 5Z4BI, 'Y0I, C56/G4LLI, CE8SVG, HC8K, JE6ZIH, JY5EC, KV4WPG, LW2BDP, PJ9X, P40V, UA0FF (Sakhalin), VK6ANC, VU2WAS, YV2IF, YV5MRR and ZY0NS came in.

Helpful

In previous months I have mentioned the London area training establishment and their s.w.l. activities. How this has paid off I shall know ere long, as in addition to various professional examinations they have some twenty-five candidates for the RAE. Among the 'specials' they noted were the three Israel stations, 4Z6I, 4Z0V and 4Z9N in Tel Aviv; cards sent off for these hearings netted an interesting letter from Ahron Kirschner 4X1AT, who notes that a Pesach 1991 Award is available for hearing two of the three stations. The Award costs £4 or 7IRCs. What impressed me was the way in which 4X1AT took considerable trouble, not only to check the reports against the logs, but to compliment the lads on their report and to point out one minor error in their copying of several QSOs. Other specials noted were EK0KBZ, 4X43ID celebrating 43 years of Israeli independence, OT0KT at Ostende Radio celebrating Marconi and GB0CPM for Crime Prevention Week. Further activity has now extended to 50MHz, and a three-element beam is being built by the apprentices for this band. Obviously they subscribe to the good old saying 'More sunlight shut out, better the DX!'

Deadlines.

Easy this time: to arrive by July 10, August 10 and September 10. The address is at the top of the page.



Both of these QSL cards were received by BRS 26053, otherwise J. Kavanagh of Swindon. QM8KZ in Sarawak replied in August 1965 and the USS *Independence* did so in June 1966.

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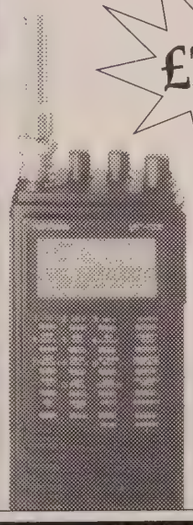

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- 30 Memories
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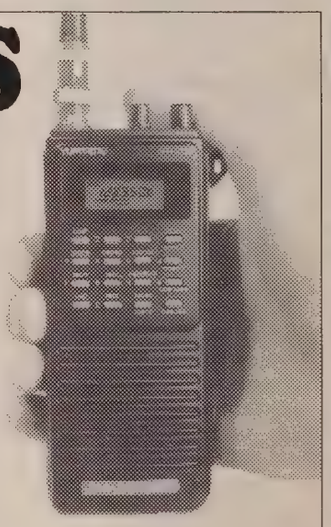

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dxtv round-up

Ron Ham, Faraday, Greyfriars, Storrington, West Sussex RH20 4HE

During the last few days all the signs were there on Band I but nothing locked in yet, wrote **John Woodcock** (Basingstoke) on April 8. Although **Russ Burke** (Northampton) said, "not much to report this time" on May 5, he did identify pictures from Spain (TVE2) at 1900 on April 18 and Italy (RAI UNO) at 1620 on the 21st. While an 'F2' opening was in progress early on April 12, **Simon Hamer** (New Radnor) received pictures from Dubai, Iran and possibly Malaysia on Ch. E2 (48.25MHz) and the USSR on Ch. R1 (49.75MHz).

In Arbroath, **David Glenday** saw an unidentified picture of Ch. Ia (53.75MHz) via a short burst of Sporadic-E around 1040 on the 2nd. There seems to have been a lot more activity in other parts of the world because in India **Lt. Col. Rana Roy** (Meerut) reports some period of 'F2' and/or TEP (transequatorial propagation) almost daily throughout March. It is surprising that from the multiple smeary images that typify 'F2' propagation he was able to identify Bangkok TV (CH3), **Fig. 1**, on Chs. E2 and E3 (55.25MHz), Chinese TV on Ch. C1 (49.75MHz) and suggest possible sources for some of the other more 'difficult' signals from SE Asia. Around 1850 on the 8th and 10th he logged 525-line signals, which appeared to be Burmese, on Ch. A2 (v.55.25MHz, s.59.75MHz) and such such signals again at 1945 on the 12th, 1830 on the 19th, 2130 on the 21st ("with distorted sound...probably Vietnam") and 1500 on the 27th.

Rana told me that the latter was from "an unidentified Western source". At 2030 on the 14th he found three different stations on Ch. E2 and often saw signals 'floating' on top of another as the ionospheric disturbance ebbed and flowed. From the many glimpses and bits of fluctuating signals Rana sorted out and pieced together transmission content such as adverts, films, the ident '3', news, an orchestra, stage-plays, sport and the Quran from Dubai TV, on Ch. E2, at 2252 and an Arabic script at 2325 on the 18th.

Satellite Watch

Les Jenkins (Godalming), using a Marpro tuner and 1m diameter 'dish' antenna, received two test transmissions, **Figs. 2** and **3**, from the new Astra 1B satellite on April 18. Les tells me that this is Astra's second satellite and that the frequency of Betzdorf, **Fig. 3**, is 11.683MHz. At the time of writing he was also receiving 'Ein Plus', 'Tele 5' and a promotional channel. On the 28th, Les logged the Dutch logo 'RTL4', **Fig. 4**, from Astra 1A, a transponder test-card from Astra 1B, **Fig. 5** and a caption which looks like 'm b c', **Fig. 6**, which he could not identify on Eutelsat F1. Any ideas? The latter is 13°E on 11.555MHz.

Tropospheric

While tropospheric openings were in progress, at times, on February 27 and March 2, 3, 8, 12, 17, 18, 20-22 and 29, Rana Roy received Band III pictures from Agra (Ch. E9), Amritsar (E7), Bahawalpur TV [Pakistan] overlapping Mussoori (E10), Bhatinda (E12), Delhi (E5), Faisalabad overlapping Kasauli (E6), Gwalior (E7) Jalandhar (E9), Kasauli (E6), Lahore TV [Pakistan] (E5) and Rawalpindi (E8). Among the programme contents, he saw adverts for tooth paste, cycle tyres, movies running in Lahore and Isphani Tea, an American serial, **Fig. 7**, from Lahore at 2040 on the 10th, 'Breakfast TV' from Bhatinda, a clock caption from Lahore TV, Fig. 8, on March 17 prior to the PM's address to the nation, an ident from Gwalior "Doordarshan Kendra Gwalior, Band III, Ch. 7 and 11 Mar 91", News in Punjabi and Urdu from Jalandhar and Lahore respectively, Prayers, a FUBK test-card from Gwalior, an episode of the serial *Hannay*, **Fig. 9**, from Thames on Lahore TV, sport and weather. The following extract from Rana's log is typical of the detailed and dedicated study he makes of the subject;

"29 Mar 0700 - E6 Kasauli, E7 Gwalior, E9 Agra, E12 Bhatinda with Breakfast TV till 0845. At 1810 E8 Rawalpindi with a multi-burst pattern. Programme started at 0830. At 0930 E5 Lahore. With Songs, signal strength 3. Also on E10 Bahawalpur Pak TV relaying Lahore TV. At 0945 News (Photo 7), **Fig. 10**, in Urdu followed by an English serial. Programmes continued till 1300 though were fading after 1030."

The atmospheric pressure readings for the period March 26 to April 25, **Fig. 15**, were taken at noon and midnight from the Short & Mason barograph installed at my home in Sussex. I mention this each time so that the weather buffs among you in other parts of Europe can compare the readings with their own charts.

Simon Hamer had a satisfactory haul of DX during the tropospheric opening on April 14/15 when he received pictures from Denmark (DR), Germany (WDR1), Norway (NRK), Poland (TVP) and Sweden (SVT1) in Band III and Denmark (TV2), Germany (NDR1&3, West3 and ZDF) and Sweden (SVT2) in the u.h.f. band. He also logged a variety of pictures from the Benelux countries, France and Eire in both parts of the spectrum.

Around 1600 on the 29th, **George Garden** (Edinburgh) drove to a clear position on the coast near Inverbervie an although he was not much above sea level this site was shielded from the Scottish IBA transmitter at Craigkelly. With his horizontally polarised amplified loop antenna perched on top of a roadside dustbin, he received a fairly clear picture, "coming in waves", from Bilsdale in the Tyne Tees area. By changing the antenna polarity to vertical he then received pictures, often in colour, from the Eyemouth (near Berwick on Tweed) transmitter of Borders ITV. George plans to check signals from this spot again, but next time with a wide-band Yagi.

During the opening on the 25th and 26th, David Glenday received u.h.f. band pictures from Belgium? (BRT1 & 2), Denmark (TV2 Aabenraa Telecom), Germany (NDR3 and ZDF) and Holland (NEDS.1, 2 & 3). At 1635 on the 25th, Dave thinks he watched Germany's ARD-1 from Bremerhaven with RB-1 local programme

Weather

"Our weather has been most unpredictable this year," wrote Rana Roy on April 18 and continued, "The month of March was pleasant with temperatures between 22°C in the day and 10°C at night for the first three weeks. The last week of March became hot with temperatures going to 37°C in the day and 26°C at night. Now due to heavy snowfall in Kashmir and hills of Uttar Pradesh the temperatures have come down to 32°C in the day and 18°C at night. We have also had black oily snowfall in the upper regions of Kashmir." In my part of Sussex, overnight temperatures were down to between 28 and 31°F at times around April 22, there was thunder on the 12th and heavy squalls, including hail, on

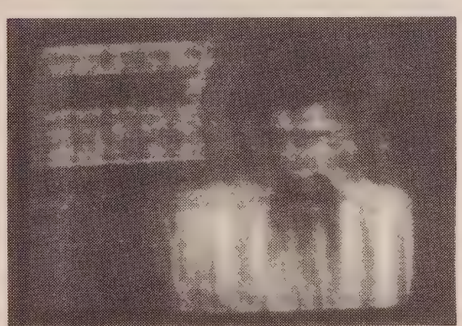


Fig.1: Bangkok.

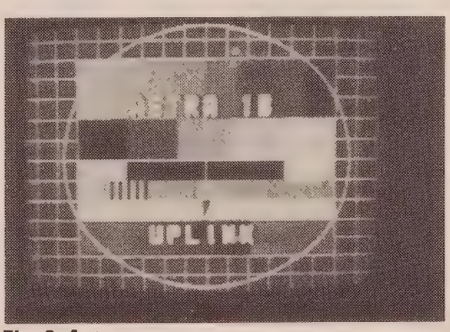


Fig. 2: Astra.

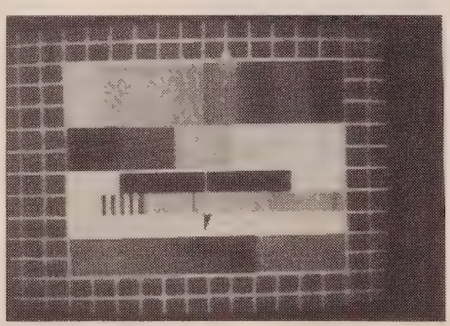


Fig. 3: Astra.

Fig.4: Astra

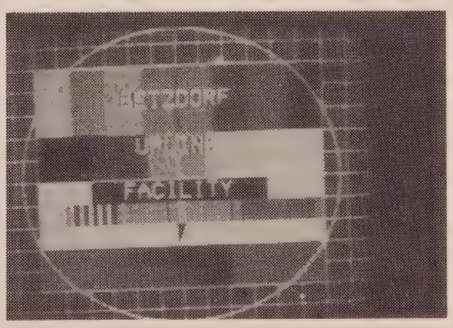


Fig. 5: Astra

Fig. 6: Eutelsat.

the 19th. I recorded 1.76in of rain in April, most of which fell on days 4, 19, 29 and 30. Many readers have an interest in recording or talking about the weather and I am sure that the 'clouds' in the slow-scan television caption, **Fig. 13**, received by **John Scott** (Glasgow) resemble 'QSO'.

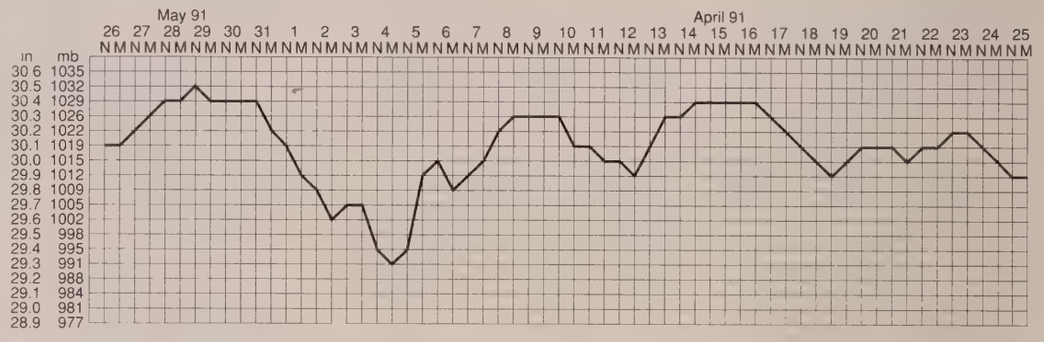
Although the pressure was high and the weather sunny and bright during the morning of May 12, Joan and I watched the first clouds of a weather-front moving in from the west, **Fig. 14** and quite expected rainy conditions next day. However, this time it was a false alarm and the 13th turned out to be fine and warm and apart from a little overnight rain, the pressure rose sharply to 30.3in (1026mb) at 1000 on the 14th and the warm spell continued. **Fig. 14**, shows some of the many miles of scaffolding being used to restore the National Trust house, 'Uppark', near Harting, Sussex, that was severely damaged by fire.

SSTV

During the Danish SSTV contest on May 5, **Henry Winter** (Bristol) had a satisfying haul when he copied pictures, around 14.233MHz, from 12 stations in nine countries; Bulgaria, Czechoslovakia, Denmark, Germany, Hungary, Poland, Spain, Sweden and the USSR. Among the slow-scan pictures copied by John Scott for the month prior to May 7 are captions from Germany, Poland, Portugal and Spain and the previously mentioned weather report from an unidentified station.

John also looked for signals taking part in the Danish contest and logged EA2JO, **Fig. 11**, LY1BZB and UB5LAK, **Fig. 12**, on the 14MHz band. He recently added an Amstrad PC1640 with hard disk and EGA display to his station and, by kind permission of his neighbours has installed an extra long wire antenna in a different direction to his existing one. My thanks to **Gordon Foote** (Abingdon) for a copy of a document which shows SSTV signals can be found around 3.735, 7.040, 14.230, 21.340, 28.680, 432.500 and 1296.500MHz. Who among you is going to send me the first u.h.f. SSTV picture and report?

Fig. 15.


May 91
April 91
26 27 28 29 30 31 1 2 3 4 5 6 7 8 9 10 11 12 13 14 15 16 17 18 19 20 21 22 23 24 25
N M N M N M

airband

Godfrey Manning G4GLM
c/o The Godfrey Manning Aircraft Museum,
63 The Drive, Edgware, Middlesex HA8 8PS.

Want to go flying? First Flight Promotions, operating from Leavesden, Hertfordshire, offer a great day out with some basic instruction, an insight into navigation and a simulator exercise. If you opt to pay the full amount then you actually get to fly a real aircraft yourself! Contact 081-364 8271 (office hours) for details. Chris and I enjoyed ourselves and learnt a lot when we tried it. Interestingly, not all the participants were on their first flight, various levels of experience being represented.

Use your PC!

As you'll see elsewhere in this issue, personal computers (PCs) are becoming ubiquitous in all fields of electronics, communications, radio, flying and all sorts of hobbies. Some readers of this column keep computer database lists of frequencies.

One software package that I tried at First Flight was Microsoft's Flight Simulator. To assist in hand flying there is a control column and rudder pedal set that interfaces to the computer. I must say I didn't like the throttle, which was controlled by the function keys. The flying controls were unrealistically sensitive and lacking in feel; the picture refreshed in jerks and not smoothly. I'm not sure how much this would improve on a faster machine. The package does, however, give a good idea as to the sort of tasks required when instrument flying.

Follow-Ups

More on the Saisho SW5000 (same as Matsui MR4099, Realistic DX440, Sangean ATS803A, Supertech SR16DN, Tatung/Decca TMR7602 and Uniden CR2021) as used by J. Cooper (Bransholme); see March 'Airband.' According to **Ken Marsh** (Southport) a long wire and a.t.u. will overcome the set's internal spurious between 440-460kHz and enable signals to be heard. Can the listener be certain that the signals are actually on the frequency apparently being tuned in?

Concorde still prefers 09R/27L at Heathrow despite the slightly shorter landing distance available, as commented on by **P.M. Yorke** (Camberley) in consideration of Paul Hilton's (Newbury) question in April.

History in the Making

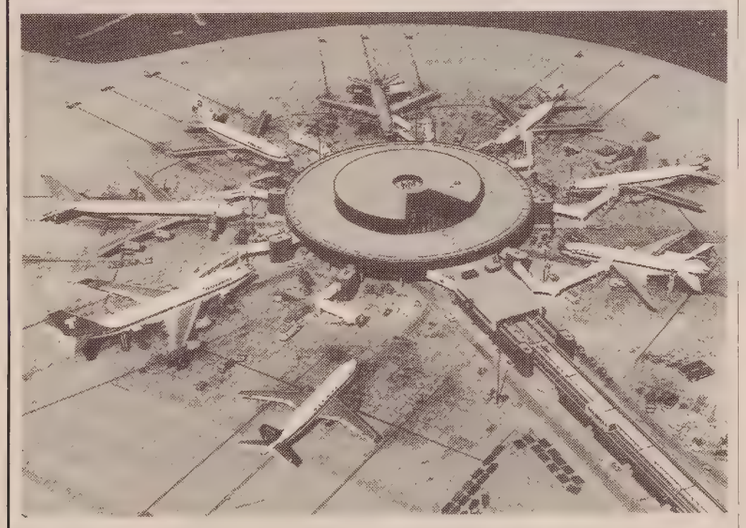
Just in time to mention this month, I heard GB1MIR on 144.55MHz f.m. on May 21 around 1800Z. Helen Sharman, the Briton-in-Space, will be well publicised elsewhere and is, strictly speaking, a few thousand feet too high to count as 'Airband' so I won't dwell on the subject. Good to hear the London amateur community listening eagerly without butting in unnecessarily. Thanks to Paul for the tip-off about which pass to listen to.

Also from Paul, a mention of a sad day when on April 3 Pan Am operated Clipper 98, a B.747 from Miami, their last flight into London Heathrow.

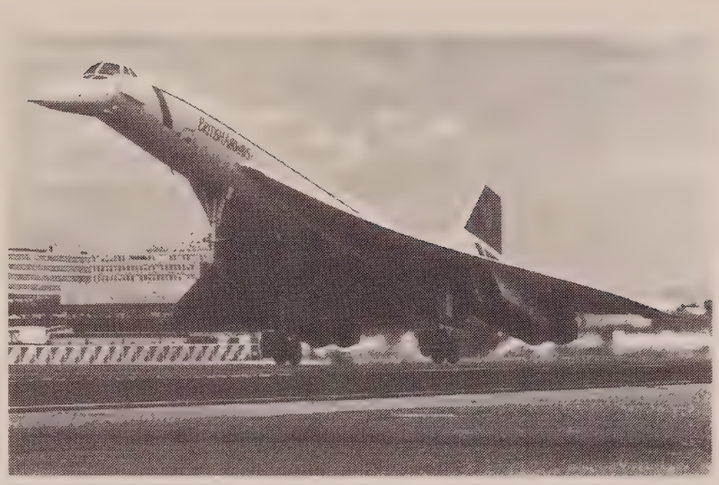
History Lives On

In the Second World War, the Germans developed a radio navigation aid using the Lorenz system. The original Lorenz blind landing aid used a directional antenna on the ground that produced two radio beams: on one side of the approach path was a signal modulated by dashes and on the other was one modulated by dots. On flying dead-centre, the airborne receiver would pick up a continuous tone equi-signal caused by the dots and dashes merging.

Consol was the developed version. The signal appears as a rotating fan made of several beams. The only European station remaining in service is at Stavanger and transmits on 319kHz giving its callsign in Morse (LEC, di-dah-di-dit, dit, dah-di-dah-dit) followed by a number of dots or, depending on the receiver's location, dashes. The equi-signal comes next. Finally, if dots were heard before the equi-signal, dashes now follow - or vice versa.



The Satellite Terminal at London's Gatwick Airport.



Concorde at London's Gatwick Airport.

Dots:	0	5	10	15	20	25	
Bearing:	203.0	204.1	205.2	206.3	207.4	208.5	
Dots:	30	35	40	45	50	55	60
Bearing:	209.5	210.6	211.6	212.6	213.6	214.6	215.6
Dashes:	30	35	40	45	50	55	60
Bearing:	195.5	196.8	198.1	199.3	200.6	201.7	203.0

Table 1.

Count the dots and the dashes; which came first? There should be 60 sounds in all. When the equi-signal occurs it becomes hard to hear the dots and dashes just before and just after - the sounds tend to merge. Your count might therefore be a bit less than 60. You are thus approaching the limits of resolution of the system. Compensate for the small error by subtracting your dot + dash total from 60. Divide this figure (the 'missing' count) by 2 and add the result to the dash count and also to the dot count. Now your total will be exactly 60. Example: 32 dashes and 24 dots. Total sounds are 32 + 24 = 56. This is missing 60 - 56 = 4 sounds. Divide the error: 4 / 2 = 2. Add this result to the counts to give 32 + 2 = 34 dashes and 24 + 2 = 26 dots. Of course 34 + 26 = 60 which is right. Finally enter the Consol tables to work out your bearing from the station.

I'm grateful to **Tim Christian** (North Walsham) for letting me summarise his account of this system. He provides an abbreviated Consol table applicable in the UK south of Ottringham, see **Table 1.**

When Tim tried this he heard no dots, then 56 dashes. This makes a corrected count of 2 dots and 58 dashes, corresponding to 203.4° true. You will need a b.f.o. to receive this signal properly and if possible, switch the a.g.c. off.

Information Sources

Paul read about the North Atlantic nets in *The Worldwide Aeronautical HF Radio Handbook* by Martyn Cook (DPR Marketing and Sales, 37 Heath Road, Twickenham, Middlesex). The author is an air traffic controller at Prestwick.

Living under the Heathrow 27L approach gives **John Thexton** G3URE plenty of aircraft to look at. He commends *The Heathrow and Gatwick Handbook* by Nigel Tompkins and Rick Dene Halliday (The Aviation Centre Ltd., Feltham, Middlesex TW13 7EQ). As John points out, noise is a problem when living under a runway extended centreline and Heathrow do alternate which of the parallel runways is used for departures and arrivals during the day. That way, everyone gets fair shares!

Any Answers?

What improvements (if any) have there been at Shanwick? Both **Norman Locke** (Peterborough) and **John Toseland** (Kettering) believe that 123.95, 127.65, 133.8 and 135.525MHz have had new relays added, possibly on slightly offset frequencies. Is there any definite news about these? Norman wants identification of DC-10 N112WA; this almost certainly belongs to World Airways, unless anyone knows better.

Lucky **Richard Bird** (Bexhill-on-Sea) lives under one of the London Gatwick standard arrival routes (STARs). Your route is probably Eastwood 1B and there is a holding pattern based on the BEXIL reporting point (N50°42.4 E000°44.1). Richard queries Dan Air's callsign. Usually they use their airline's name ('Dan' stands for Davis And Newman, the founders). Is any other callsign now known to be used?

Frequency & Operational News

Lots of changes in CAA *GASIL* 4/91, aerodromes first. Aberdeen: a.t.i.s. on 127.275; 124.9MHz withdrawn. Duxford: 128.075 replaces 123.5MHz. Fowlmere: new aerodrome 123.25MHz. Leicester: 122.125MHz. Netherthorpe: 123.275MHz. Wycombe Air Park: ground movements 121.775MHz. Now the beacons. Benbecula: 116.95MHz, temporary v.o.r., sends TST, do not

Abbreviations

Arinc	Air Radio Incorporated
a.g.c.	automatic gain control
AIC	Aeronautical Information Circular
a.t.i.s.	automatic terminal information service
a.t.u.	antenna tuning unit
B.	Boeing
b.f.o.	beat frequency oscillator
CAA	Civil Aviation Authority
DC-	Douglas Commercial
f.m.	frequency modulation
GASIL	General Aviation Safety Information Leaflet
kHz	kilohertz
L	left
MHz	megahertz
n.d.b.	non-directional beacon
NOTAM	NOTice to AirMen
R	right
UK	United Kingdom
USAF	United States Air Force
v.o.r.	very high frequency omni-directional radio range
Z	Universal Coordinated Time (UTC = GMT)

use. Ipswich: new n.d.b., PSW, 328kHz. Lands End: n.d.b. LND on temporary frequency 340.5kHz.

In Northern Ireland, there are some prohibited areas where helicopters aren't allowed. Of these, Cookstown, Dungannon and Magherafelt have had their centres moved very slightly. They are probably over prisons so don't think of using a helicopter as an escape route! This follows a celebrated case a while ago that made the national newspapers when a helicopter was hijacked for this purpose.

The lower airspace radar service will be reduced as the Ministry of Defence cut back their Military Emergency Diversion Aerodromes. This affects Leeming, Lossiemouth, Valley, Waddington and Wattisham. Pilots, as always, please consult your NOTAMs.

Two company frequencies with thanks to Paul Hilton: British West Indian Airlines (BWIA) 8.921MHz shared with British Airways; United and Pan Am 131.4MHz. Also from Paul, the USAF Thunderbirds have been known to communicate on 141.85, 235.25, 322.95 and 413.1MHz during displays. And the Blue Angels use 143.6, 251.6 and 275.35MHz.

The PFA International Rally is at Wroughton this year and 132.9MHz will be specially activated between 5-7 July for participating aircraft (CAA AIC 42/1991). Special access lanes are in force so as to avoid Lyneham.

Colin Frowen (15 Poveys Close, Burgess Hill, West Sussex, RH15 9TA, England) specialises in frequency lists and welcomes direct correspondence with anyone in mainland Europe on the subject of aviation radio. Here's his latest list (all frequencies in MHz):

6.640 New York Arinc
8.861 Bombay, Delhi
8.935 Dakar
11.342 New York Arinc
Athens 122.85, 129.8 & 130.95
Barcelona 119.1
Berlin 124.7
Bordeaux 133.675, 133.725 & 124.25
Canaries 129.3
Copenhagen 124.675 & 129.475
London 124.725
Marseille 123.9 & 128.325
Milan 134.3
Munich 124.825
Padova 124.15, 125.475, 133.3 & 134.75
Paris 126.1 & 129.625
Rome 125.75, 127.95, 119.2, 132.075 & 132.525
Scottish 119.875, 126.25, 126.85, 127.275, 128.5 & 134.775
Seville 132.925 & 134.55
Southampton 120.225, 128.85 & 131.0
Stavanger 125.55 & 128.0
Stockholm 123.3
Sundsvall 135.025
Svea 123.3
Vienna 124.4

One Man's Airband

Christopher Hibbard (Swansea) finds Mumbles, Chivenoor and Brawdy are quite local to him, each with coastguard or rescue facilities. Air/sea rescue is important in this coastal area. Fairwood is the local airport and activities here include parachuting and microlight flying. At the weekends the Air Training Corps' gliders exercise with 129.975MHz in use for instructions given from the ground. Trinity House serve their Bristol Channel lightships by helicopter, which calls on marine channel 30 (157.5MHz f.m.) and often refuels at Fairwood.

Rescue!

It's not unknown for light aircraft, when in distress away from the mainland, to have their transmissions relayed by higher-flying airliners as the latter are still line-of-sight to the ground station. **Chris Selwood** (Ashtead) describes the organisation of a typical rescue. Search and rescue Nimrods and helicopters can coordinate on 5.680MHz, the Nimrod having the advantage of speed and endurance. Only the helicopter can actually pick ditched aircrew out of the sea but the Nimrod can drop rescue dinghies and survival equipment from its bomb bay.

The next three deadlines (for topical information) are July 12, August 9 and September 13.

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scanning

Alan Gardener
PO Box 1000, Eastleigh, Hants SO5 5HB.

Icom have at last announced the follow up to their popular IC-R7000 communications receiver. This will be called the IC-R7100 and is similar in appearance to their h.f. receiver the IC-R72. The new model retains all of the existing features present on the IC-R7000 plus several new ones. These include 900 memory channels, 10 search bands, skip and window scan, noise blanker, a.f.c. and backlit l.c.d. display. I have always considered the IC-R7000 to be more of a communications receiver than a scanner because of the large tuning knob which dominates the front panel and the rather slow search / scan facilities. However any criticism of the receiver is offset by its very good strong signal handling ability and professional build quality.

I would like to have seen Icom take the opportunity to upgrade the computer control port, which still uses the user un-friendly CI-V protocol. This is difficult to write software for and necessitates the use of an external interface box in order to convert to RS232 levels. Despite this minor criticism, I am sure that the new model will prove to be popular, especially with professional users. The IC-R7100 is not available at the moment, but when it does appear it is expected to sell at just over £1000 - so start saving now. You can contact Icom (UK) Ltd at Sea Street, Herne Bay, Kent CT6 8BR or phone (0227) 741741 for further details.

AOR in the UK

As a prelude to the opening of the Single European Market in 1992, AOR have opened a UK office that will form the nucleus of their new European base. In order to promote this event, AOR (UK) Ltd participated in the April RSGB exhibition at the NEC. They had three of their current models on open display, the AR2500, AR2800 and a slightly restyled AR3000.

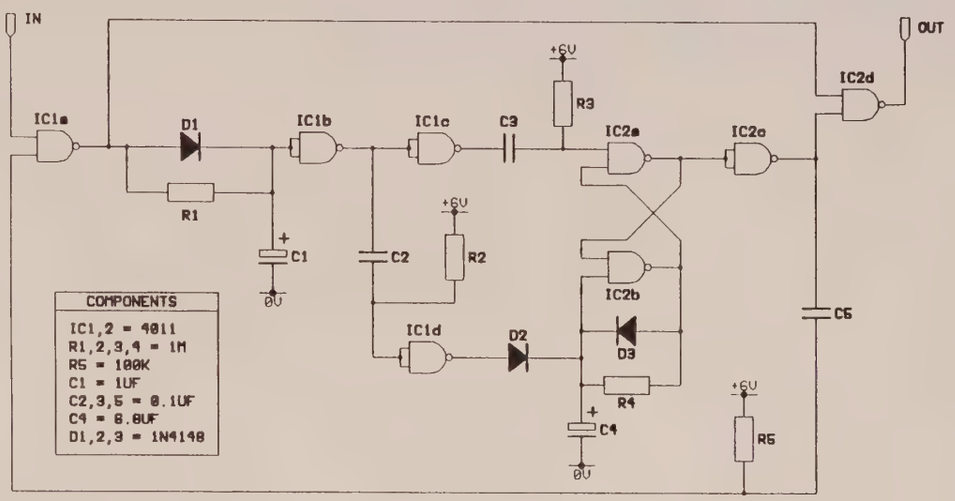
I took the opportunity to talk to Richard Hillier, who is the sales director of AOR (UK) Ltd and his fellow directors. I found it particularly interesting to hear about the AOR design philosophy and their willingness to listen to comments made by owners of their equipment. As scanning receivers are their main line of business they have to regularly introduce new models in order to keep ahead of the competition. They are able to do this because of the relatively small size of their production runs which allows them to update models more frequently. Whilst this means that supply is often outstripped by demand when new models are first introduced, it does allow them to incorporate innovative new features when the technology becomes available. This is often not possible with models produced by the larger companies, many of which are specifically designed with the American market in mind.

This point became more apparent during our conversation when we contrasted the ways in which people use scanning receivers in this country and in America. In the UK it would seem that more use is made of the search facility, whereas in the US the demand is for large numbers of memory channels and faster scan speeds - I will examine the reasons for this later but the difference is clearly illustrated in AOR's latest models the AR2500 and the AR2800.

The AR2800 on the other hand was developed by AOR in order to meet the demand for a mobile/base station version of the popular AR1000 hand-held. The key features in this case being up to 10 inter-linked search bands and the ability to lockout individual frequencies in the search range.

Listening Habits

The reason for the emphasis on large numbers of memory channels in America would seem to be the availability of published frequency lists, all of which are are sold openly with specialist hobby magazines such as *Monitoring Times* and *Popular Communications*. These regularly feature US Military, Police and Government agency frequencies. Quite often, all an American scanner enthusiast has to do is load up memory channels with published frequencies, sit back and listen to the action. On the other hand in the UK and most other European countries this is not the case. Frequencies are not published and listening to anything other than broadcast or amateur stations is illegal.



Alan Gardener decided that his recently purchased AR-2001 needed a scan pause facility.

AR2001/2 Modification

I recently bought a second-hand AR2001 for use in my car. After a short period of operation I became aware of the lack of a scan pause facility which now seems to be standard on most models of scanner. The idea of this is that the receiver pauses the search or scan when a signal is detected and then resumes after a short delay even if the signal is still present. The advantage of this is that the user can stop the scan manually if an interesting signal is heard. It also permits a scan to resume without manual intervention when a continuous signal is detected, which is very useful when the scanner is fitted in a car, as it requires less button pressing and allows more time with both hands on the wheel.

Operation

The circuit works by simulating the squelch circuit closing a short period after a search or scan routine has stopped for a signal. This has the effect of fooling the control circuit into believing that the transmission has ended, so it resumes the scan. One problem that I encountered whilst developing the circuit was the scan stopping again on the adjacent channel. This was because the squelch circuit took some time to close again once the original signal had gone. I solved this by adding an extra timer stage (R1, C1) to the circuit. This only activates the main timer (R4, C4) after a signal has been present for more than a second.

Once the squelch opens the new circuit routes the signal straight through IC1a and IC2d which stops the scan. If the transmission ends within a second, the scan is allowed to continue. However if it continues the main timer is set and the scan remains stopped. After a period set by the main timer the squelch signal is removed for 10mS (set by R5, C5) fooling the m.p.u. into resuming the scan, at which point the circuit resets itself back to its original state. If the transmission had ended before this could happen the timer would have reset back to the start of its timing cycle.

This is to ensure that the delay period at the end of a transmission remains constant when the circuit is used in conjunction with the 2001 delay function. If this is selected the receiver will operate as it did prior to the modification with the scan continuing a short period after a transmission has ended. The delay period being determined by the new circuit plus the existing 2001 delay. This helps to overcome the problem of the rather short built in delay period, which with the values shown is extended to around 10 seconds. If you wish to alter this period change the value of C4. Each 1µF of capacitance approximating to 1 second of delay plus the fixed 3 second delay built into the 2001.

Installation

Fitting the circuit into an AR2001 is easy. The 0V connection goes to the chassis and the 6V supply is obtained from pin 1 of connector J4 on the top p.c.b. The lead from pin 2 of J4 is cut and the input to the new circuit fed from this pin. The other end of the lead which feeds pin 2 of connector J1 on the control board is connected to the output of the circuit.

In an AR2002 the 0V connection still goes to the chassis but the 6V supply is obtained from pin 1 of connector J1 on the rear of the remote socket p.c.b. The lead from pin 7 of connector J3 on the same board is cut and the end connected to the pin is used to feed the input of the new circuit. The other end of the lead which feeds pin 7 of connector J1 on the control board is connected to the output of the circuit.

Mobile Scanning

Last month I described some of the problems you may encounter when fitting a scanning receiver into a car and how to avoid the worst of them. This month I continue the theme from the point we left off - with the receiver mounted in the car, complete with a d.c. supply and antenna - so let's try a test drive. If you are lucky you will have plenty of audio from the built-in loudspeaker and no interference from the engine.

Were you lucky? No? - I didn't think so. Most scanners don't have a big enough built-in speaker and most cars don't have enough suppression components fitted for the type of signals we are interested in.

First of all let's take a look at how to boost the audio level. The cheapest way is to fit an additional speaker in the car, these are available from most car accessory shops and shouldn't cost too much. Don't choose one of the really high quality types as we are only interested in speech, which requires a much narrower frequency range than music. Try and choose one with an 8Ω impedance as this will put much less strain on the generally low power scanner audio stages than one of the 3-4Ω units designed for the higher power levels developed by car stereo systems. Mounting any additional speaker in the car can be difficult. You may find that the manufacturer has made provision for mono, stereo and front / rear speaker systems, in which case you may be able to utilise one of the unused positions.

Alternatively it may prove possible to mount one of the 'pod' type speaker housings under the dashboard

If you are really keen, or limited for space then one of the specially designed communications style mobile speakers may be worth considering. These are sold by most amateur radio dealers and good CB shops and generally have a specially tailored frequency response, which helps to overcome the engine and road noise found with most cars. Amateur radio rallies are a good source of p.m.r. surplus equipment. So if you attend one keep a lookout for small rectangular 'Pye' mobile loudspeakers, or better still the tiny sealed units that used to be made by 'Asp' which are really excellent. These are black with a circular pattern of holes in the front and measure about 70mm square by 40mm deep and should not be confused with similar models of foreign manufacture, which don't work at all well.

Interference

Having now boosted the audio output let's turn our attention to the problem of interference. This generally enters the receiver in two ways, either by travelling along the power leads or by direct reception via the antenna.

To determine if the first of these is a problem disconnect the antenna, select a.m. (if you can), turn the squelch down and the volume up. Start the engine and depress the accelerator slightly, you may hear a high pitched whine or low frequency buzz both of which will vary with the engine revs. The whine comes from the alternator charging circuit and the buzz emanates from the ignition circuit.

You really need to decide whether or not the interference is going to be a problem at normal listening levels. If it is really severe you may need to fit a series choke and a high value electrolytic capacitor across the d.c. input to the scanner. Choose one with a value of over 1000μF and a working voltage of greater than 20V.

Next month I will describe how to go about curing interference which is radiated by the ignition system and received via the antenna. So until then-

Good Listening.

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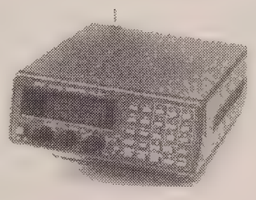
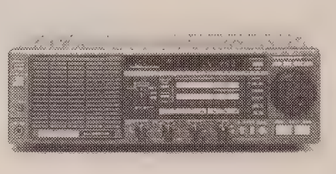
AR2800 £395.00



R2000 £599.00



General Coverage HF Receiver

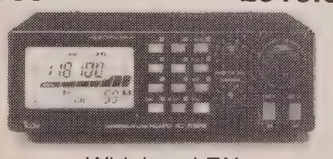
AR1000 £249.00

Scanning RX 0.5-1300MHz

R1 £399.00

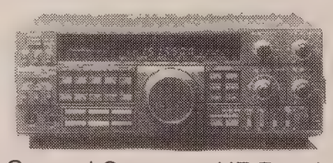
Hand portable Receiver

R100 £510.00



Wideband RX

R5000 £895.00



General Coverage HF Receiver

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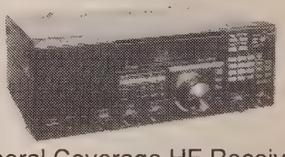
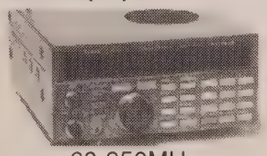


General Coverage HF Receiver

FRG9600(M) £520.00



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decode

Mike Richards G4WNC
200 Christchurch Road, Ringwood, Hants BH24 3AS.

David Woods has his shack on board ship where has has found the ship's main receiver to be the ideal for his decoding activities!

I'd better start this month by correcting a couple of errors that crept in over the past couple of months. The first concerns the address of BARTG's membership secretary. The correct address is: Ann Reynolds, 169 Bell Green Road, Coventry CV6 7GW. Apparently I left the 'Green' out of Bell Green Road - sorry. Still with BARTG, it seems that I was wrong in saying teleprinters only operated at one speed. Ian Brothwell from BARTG tells me that the Creed 75 had a gearbox to allow speed changes. Ian was not able to tell me the speeds, but the most likely are 50 and 75 baud as these were the two commercial standards for land-line circuits.

The final correction concerns the captions for the Meteosat images in last month's decode. Offenbach operates on 134.2kHz not 135.2 as stated. Let's hope I can get through this month without any serious errors!

Readers' Letters

Donald Coates from Slough has recently developed an interest in the reception of weather FAX images. His current equipment comprises an AR-3000 receiver with a Kantronics KAM all mode TNC for decoding. The computer is the popular Amstrad PC-2086 with a hard disk. Donald's problem is, being new to the subject, he's unsure how to use the KAM for weather FAX. He would also like help on some of the other modes. Although the KAM is similar in many ways to the PK-232, they don't seem as popular. If anyone has experience of using the KAM for FAX perhaps they would drop me a line so I can pass the info on to Donald.

Another plea for help comes from **Ian McAdam** of Ringwood. He is contemplating purchasing the sideband unit recently advertised by RGW Electronics. He is hoping that by adding this unit to his Fairmate HP-100E he will be able to enter the world of utility decoding. As I have yet to try this device I can't really help. However, if any readers have used this unit for utilities, I'd be pleased to hear from you.

David Woods has a somewhat unusual shack as it is based aboard ship! At the time of writing he was sailing just of the coast of Italy in the Central Adriatic. For his utility decoding David uses an IBM compatible computer running the PC-SWL package from Comar Electronics. David has tried several receivers including the Philips D2935 and Sony ICF-2001D, but finally settled on the ship's main receiver! This was a Skanti system running with either a tuneable whip antenna or a long wire. To keep an accurate record of his loggings David runs the dBase 3 database system on his PC. The latest enhancement to his set-up is a change to the Hoka Code-3 decoding package complete with a 386 based PC and a Laserjet printer.

KUNA (KUwait News Agency)

Does anyone out there know what's happening with this station? KUNA went off-air during the Iraqi invasion of Kuwait and does not appear to have officially returned. There have been many rumours that the station would resume transmissions from London. However, I have yet to receive any positive confirmation of this. The only report so far comes from **Day Watson** of Clevedon. Whilst recently looking for Tokyo Meteo on 18.441MHz, he came upon a 50 baud 425Hz shift signal transmitting Arabic text. Later, at about 1300UTC, this changed to English news reports. In the idle state the station was sending TNB#QNR, RYRYRYRYRYRYRY followed by same message, but with an extra space: TNB# QNR,.

As this was an Arabic transmission, decoding required use of the Klingenfuss *Radioteletype Code Manual*. Besides giving technical details of many data modes, this book gives some valuable decoding data. The Arabic section contains some useful look-up tables that can be used to convert the Latin letter to the Arabic equivalent. It's obviously not practical to do this with normal messages, but it can be used very effectively in cases such as this. A literal translation of TNB#QNR gives UNA#LND. You might think this is still gibberish, but reference to the Klingenfuss vocabulary of Arabic words reveals that LND is the standard term used for London. But, there were no clues on the meaning of UNA#. All I can guess is that UNA is KUNA without the K!

Although this decoding appears to have exposed a few clues as to the whereabouts of the signal, there are still a few problems. The first is that the quality of the signal received by Day Watson did not align with what would be expected from a signal originating from London. The transmission was also unusual in that it suffered a 200Hz drift during the monitoring period.

So we now have several questions that, I hope, some of you may be able to answer. So if you have any information on this station, please drop me a line with the details.

Baud Rates

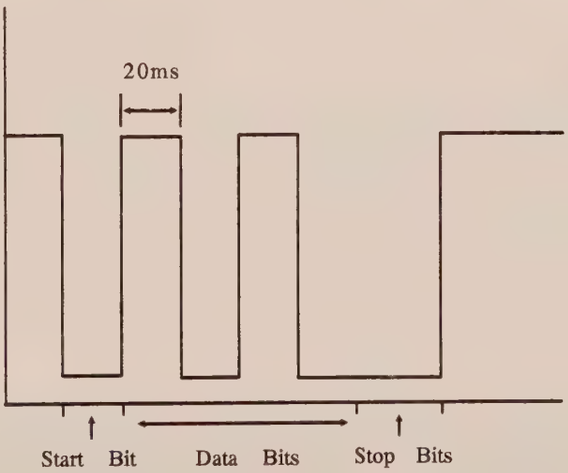
G. Dobson of Bradford has written with a query regarding the comparative performance of 50 and 75 baud signals. Rather than just explain this one problem, I thought it might be helpful to give some background on the evolution of baud rates.

The first point we need to examine is the correlation between baud rate and words per minute. The reason is simply that words per minute refers directly to the message we want to send. Let's start with a basic RTTY signal using the International Telegraph Alphabet No2. In this case each character comprises a start bit, the five character elements followed by one and a half stop bits. Using the most common speed of 50 baud the length of each element is 1 second/50 i.e. 20ms. If we now add the elements of a character, you will see that there are seven and a half elements for each character. From this you can see that the duration of each character must be 7.5 x 20ms or 0.15 seconds. The next stage is to convert this to characters/minute by dividing 60 by 0.15 giving 400 characters/minute. With an average of five letters/word in the English language, the maximum transmission rate becomes sixty words/minute. When you consider that the best Morse operators would have difficulty maintaining speeds greater than 30 words per minute, you can see the speed advantage that RTTY has.

Getting back to the original point and the background to the baud rates we now regard as standard. To use the RTTY system on an international basis it was important to establish some standard formats. The first of these was the coding and I've discussed the ITA2 code in previous columns. The next is, of course, the operating speed. Because the RTTY system demands that both ends of the link use their own timing system, it's important that the timing is clearly specified. I've been unable to gather any clear evidence why 50 baud was chosen, but would summise that it would have been the highest speed that would give error free transmission with the technology available at that time. There were demands for higher speed transmission and this need was met with the 75 baud rate.

When looking at the operation of some of the more advanced modes you will usually find that they are all related back to the 50 baud standard. If we take SITOR for example, the baud rate on the air is 100 baud. But the pulsed nature of the transmission results in an effective rate of 50 baud. This similarity also exists with FEC where, because every character is repeated for error correction, the effective rate is again 50 baud. Examination of the multiplexed modes such as 200 baud TDM reveals that this breaks down to four 50 baud channels. I think this clearly shows that 50 baud is the building block for most communications systems.

Moving on to the reasons for 75 baud suffering more errors than 50 baud. This can be due to several reasons, but is usually due to the effects of interference or noise. For any given burst of noise, the number of characters lost will depend directly on



Timing of 50 Baud RTTY Signal

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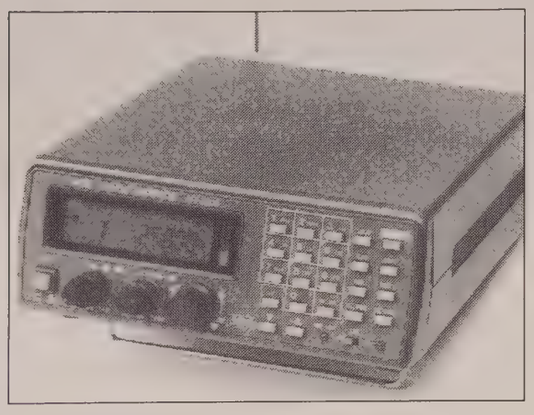

AR2800 Base/mobile scanning receiver. The frequency coverage is 500kHz – 600MHz and 800MHz – 1300MHz. All mode AM, FM (narrow), FM (wide), and built-in BFO for USB, LSB, CW. The AR2800 features 1000 memories for spot frequencies and 10 search banks. Operation of the receiver is fairly easy and is similar to that of the popular AR1000/AR2000. The AR2800 is operated from 13.8V DC and is supplied with an AC adaptor, DC lead, mobile mount and telescopic aerial.
R.R.P. including VAT £395 (P&P £5).

AR2000

Hand-held wide band scanning receiver. Improved specification. The coverage is 500kHz – 1300MHz with no gaps. Modes are AM, FM (narrow) and FM (wide). The AR2000 features 1000 memories for spot frequencies and 10 search banks. The receiver is powered from its supplied internal nicad batteries but these may be removed and dry batteries substituted to allow extended operation in the field. The AR2000 may also be charged and powered from the car cigar lighter socket using the supplied lead. Also supplied as standard are the DA900 wide band aerial, soft case with strap and AC charger.
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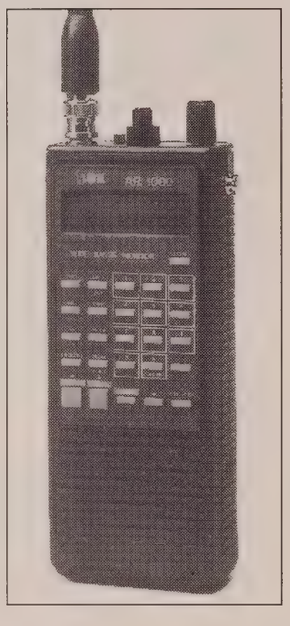

AR2500 Base/mobile scanning receiver featuring coverage from shortwave to microwaves 500KHz –1500MHz. All mode AM, FM (narrow), FM (wide), and built-in BFO for USB, LSB, CW. An 'Elephant' memory can store 1984 spot frequencies and 16 search groups. The memory is permanent using an EEPROM (but can be overwritten). Computer control is available via the RS232 port on the back panel. The AR2500 is operated from 13.8V DC. Performance and flexibility at an affordable price.
R.R.P. including VAT £419 (P&P £5).

AR3000 Unique top of the range desk top wide band scanning receiver. All mode AM, FM (narrow), FM (wide), USB, LSB, CW. The frequency coverage is 100kHz – 2036MHz with no gaps. Triple and quadruple conversion ensure superior performance. The receiver is supplied with a telescopic aerial, 13.8V DC lead, AC power supply and operating manual.
R.R.P. including VAT £765 (P&P £5).

DA3000 Wide band discone aerial for external mounting. The frequency range is 25MHz – 2000MHz. The 16 elements are made of stainless steel and the supporting mast is aluminium, an additional supporting pole will be required for installation. 'V' bolts and clamps are provided. The aerial is supplied with approximately 15m of coax terminated in a BNC connector ready to plug in and use with any AOR receiver. **R.R.P. including VAT £69** (carriage extra).

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the speed of the transmission. Simply, the higher the baud rate the greater the error rate.

NOAA Schedules

Day Watson has recently sent me full details of the transmissions from the Honolulu station. Incidentally, this information was received as part of a QSL package. NOAA (National Oceanic and Atmospheric Administration) operate many stations, but here I'll concentrate on the Hawaii based KVM70 station. This station operates on four frequencies as shown here:

9.9825MHz, 11.09MHz, 16.135MHz and 23.3315MHz.

These are the assigned frequencies and you will need to deduct 1.9kHz for the 'carrier' frequency. The power from all transmitters is 10kW using F3C emissions with a shift of ±400Hz.

The range of charts and transmission times are shown here.

Test Chart/ID/Schedule; 2300, 0533, 1133 & 1733UTC

Significant Cloud Features; 2347, 0547, 1147 & 1747UTC

Satellite Infrared Image; 0001, 0601, 1201 & 1801UTC

Pacific Surface Analysis; 0017, 0617, 1217 & 1817UTC

Tropical Surface Analysis; 0041, 0641, 1241 & 1841UTC

48 Hour Surface Forecast; 0107 and 1307UTC

72 Hour Surface Forecast; 0707 and 1907UTC

24 Hour Wind Forecast; 0127UTC

48 Hour Wind Forecast; 0152UTC

48 Hour Ocean Winds/Waves; 1327UTC

72 Hour Ocean Winds/Waves; 1927UTC

Ocean Surface Temperatures; 1942UTC

One notable point about the satellite images is that they are relayed direct from the geostationary satellite. This relay is done in real time, so you are receiving live satellite pictures.

If you don't have FAX capabilities, you can still receive this station using c.w. on the following frequencies: 9.050, 13.665, 16.4575 and 22.472MHz. The transmission times are 0100, 0400, 0700, 1300 and 2000UTC.

For those of you who like to collect QSLs, the address for the Honolulu stations is: Regional Director, National Weather Service, PO Box 50027, Honolulu, Hawaii 96850.

MAP Rabat Schedule

With the continuing popularity of press stations, I thought you would be interested in see the latest schedule for MAP (Maghreb Arabe Presse) in Morocco. I've split the listing into language groups as this station transmits in Arabic, French and English.

Arabic 0900 to 1030UTC and 0330 to 0500UTC:

18.496MHz (CNM80/k11)

French 1000 to 1130UTC:

7.8424MHz (CNM20/1k), 10.213MHz (CNM29), 14.76MHz (CNM61), 15.7527MHz (CNM66/k2), 15.9999MHz (CNM69/1k), 18.2209MHz (CNM76/k9), 19.1711MHz (CNM85/k11).

French 1530 to 1700UTC:

As for 1000 to 1130UTC except 14.76MHz is replaced by 10.6341MHz (CNM37/9k)

English 1200 to 1400UTC:

Frequencies used are the same as the French broadcast.

Day Watson reports that the best frequency for UK listening is 18.4961MHz. Those wishing to QSL should send a sample of received copy to Maghreb Arabe Presse, Le Chef d'Exploitation, Rue Ibn Aicha, BP 1049 RP, Rabat, Morocco.

QSL Addresses

Just for a change this month, I'm concentrating on some less common QSL addresses.

Zimbabwe Inter-Africa News Agency, PO Box 8166, Causeway, Harare, Zimbabwe.

Agence Zarie-Presse (AZAP), Administration Centrale, Cabinet du Delegue General, 44-48 Avenue Tombalbaye, BP1595 Kinshasa 1, Zaire.

Aden News Agency (ADA), PO Box 1027, Aden, Democratic Peoples Republic of Yemen.

Saba News Agency, PO Box 1475, Sana'a, Arab Republic of Yemen.

Telegrafska Agencija Nova Jugoslavija, Tanjug, Administracija Obilicev Venca 2, Post.Fah 439, YU-11000 Beograd, Yugoslavia.

Vietnam Thong Tan Xa Vietnamese News Agency VNA, 5 LyThuong Kiet, Hanoi, Vietnam.

INFOIND New York, RCA New York, Rocky Point, Long Island, NY11778, USA.

Associated Press AP, Communications Department, Technical Centre, 16 Elkins Road, East Brunswick NJ08816, USA.

Uganda News Agency, C/O Ministry of Information and Broadcasting, PO Box 7142 Kampala, Uganda.

Emirates News Agency, PO Box 17, Abu Dhabi, United Arab Emirates.

Agence Panafricaine d'information PANA, Service Technique, BP4056 Dakar, Senegal.

News Agency of Nigeria, C/O National Theatre, PMB12756 Iganmu, Lagos, Nigeria.

Frequency List

Here is a selection of logs received from readers during the past month. The format used is; frequency, mode, speed, shift, callsign, time and notes.

3.174MHz, ARQ-E3, 100, 385, UNID, 2143UTC, 8CRC, sync only

3.33MHz, RTTY, 50, 400, RWZ72, 0100UTC, Moscow Met

3.898MHz, ARQ-E, 72, 400, UNID, 2324UTC, Idles only

7.625MHz, RTTY, 100, 400, HZN47, 1640UTC, Jeddah Meteo

7.658MHz, RTTY, 50, 400, YZD, 1900UTC, Belgrade Press

8.1228MHz, RTTY, 50, 400, TNL, 1900UTC, Flight plans

8.462MHz, SITOR B, 100, 170, SVU4, 0300UTC, Athens Radio

9.041MHz, RTTY, 100, 400, 5YE, 1702UTC, Nairobi Met

10.965MHz, RTTY, 50, 400, JYN41, 1500UTC, Amman Meteo

11.063MHz, RTTY, 50, 400, LZU2, 1730UTC, Sofia Meteo

11.475MHz, FAX, 60, 288, HMF52, 2343UTC, KCNA Pyongyang

12.256MHz, RTTY, 50, 170, 5YD, 1700UTC, Nairobi Air Radio

12.7185MHz, cw, -, -, NMN, 1715UTC, US Coastguard

12.875MHz, cw, -, -, IQX, 1649UTC, Trieste Radio

14.925MHz, ARQ-342, 96, 850, RFTJ, 2053UTC, FF Dakar

16.15MHz, RTTY, 50, 400, 9VF205, 1355UTC, Tokyo Press

16.912MHz, cw, -, -, SUH5, 1601UTC, Alexandria Radio

16.9428MHz, cw, -, -, YUR7, 1534UTC, Rijeka, Yugoslavia

16.976MHz, cw, -, -, NMN, 1540UTC, Portsmouth USA

17.013MHz, cw, -, -, 5BA, 1430UTC, Nicosia Radio

18.1095MHz, RTTY, 50, 400, SUU, 1700UTC, Cairo Meteo

20.7MHz, ARQ-SWE, 100, 170, -, 0833UTC, MFA Stockholm

23.01MHz, FAX, 120, 576, NPN, 1635UTC, USN Apra Harbour.

Happy decoding.

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info in orbit

Lawrence Harris
5 Burnham Park Road, Peverell, Plymouth, Devon PL3 5QB

Each fortnight I receive a list from **Geoffrey Falworth** of Penwortham, containing all of the expected satellite launches due during the next few weeks. We have been expecting the launch of a new Russian weathersat for some time, and finally, at 1246UTC on April 24 my scanner picked up a signal on 137.30MHz just half-an-hour after METEOR 3/3 had passed by using the same frequency. The new satellite was travelling southbound at a low elevation, and has a distinct tone, different from the other METEORS. I recorded the signal and ran the computer program to check the exact location of each known Russian weathersat in case some older one had been re-activated. They were all elsewhere and so the new transmission would probably be METEOR 3/4. The picture suggested an orbit higher than the series two METEORS and the next pass confirmed it as METEOR 3/4.

At first my software - I use VGASAT - would not synchronise the picture from METEOR 3/4 and so I had a careful look on the framestore. Interestingly the new METEOR has 12 black bars in its telemetry but METEOR 3/3 has 13 and so software that might use this for sync purposes would not work. In fact, while pondering this problem I tried running it on the NOAA program and it synchronised perfectly, suggesting that the bars are not used. A few days later **Dave Cawley** of Timestep Weather Systems sent me a new purpose-designed program which does the job properly. METEOR 3/4 also transmits excellent quality infra-red imagery and this has synchronised perfectly on all versions of the software.

NOAA 12

The next satellite due for launch was NOAA 12 scheduled for May 14 and I received a list of the expected satellite operations for NOAA-D (its correct pre-launch name), which gave the switch-on times for each transmitter and other units. I really must publicly thank Dave for this most excellent communication that also contained the expected elements for the satellite. Using this data I was able to predict when NOAA-12 would be on over the UK and they proved accurate. I picked up the 136.77MHz beacon at 0844UTC on May 15 (by accident - I hadn't noticed its activation time!) and a reference to my predictions program Instant Track confirmed it as NOAA 12. I then contacted the Remote Imaging Group to confirm that they knew of the launch. The a.p.t. (picture) was due on at 2200UTC on May 15 and so I arose the following morning and received the first a.p.t. on 137.50MHz at 0640UTC on May 16.

METEOSAT-5 (MOP-2)

This geostationary weather satellite was launched on March 2 and some tests were carried out before it became the mission satellite at the beginning of May. Problems became apparent and operations were returned to METEOSAT-4. **Peter de Jong** of Leiden in Holland sent me a picture of the message displayed on May 2 (see **Fig. 1**). He reports that the first visible image was taken near mid-day on April 3 and "all systems are nominal". My METEOSAT equipment was not operating for a few days while I had a problem with my usual dish, so I missed seeing the METEOSAT-5 header. As of late May the headers still include number 4 as the source. METEOSAT-5 is situated at 0° longitude near METEOSAT-4, and METEOSAT-3 is being drifted westwards to about 50° west (over the Atlantic). We can expect pictures from this new position from about August 1. Again my thanks to Dave for some of this information.

Other Weathersats

For a few days both METEOR 3/3 and 3/4 used 137.30MHz continuously until the morning of May 8 when METEOR 3/3 was switched off. Meanwhile METEOR 2/20 had been transmitting on 137.85MHz still with its fault - missing phasing bars - and did so until April 29 when it didn't come on. The next day METEOR 2/19 came on using 137.85MHz and in perfect condition.

OKEAN 2

This oceanographic radar satellite has not been very active on v.h.f. recently. However, while I was writing this, my scanner suddenly detected a radar picture from OKEAN while it was passing northwards over Norway. Until a year or so ago, OKEAN invariably transmitted pictures only while within range of the Russian ground stations, so that we only saw easterly passes.

Since then OKEAN has transmitted all types of pictures from a wide range of passes; presumably the Russians are using their ships to receive data, as well as from the ground stations. For several days in May, OKEAN has come on only just before the end of its pass so curiosity led me to check its position on 'Instant Track'. This revealed that the transmissions were starting as soon as it entered sunlight - while passing northwards. The radar equipment uses considerable power, hence its operation in sunlight only.

```
* ESA          METEOSAT - 5          EUMETSAT
*
* ADMIN MESSAGE 05/03   ISSUED ON 02/05/91
*
* WE ARE PRESENTLY OPERATING DISSEMINATION
* SCHEDULE 32/05M01. YESTERDAY 01/05/91 THE
* FOLLOWING FORMATS WERE NOT DISSEMINATED
* OR WERE INTERRUPTED DURING TRANSMISSION:
*      FORMAT        TIME        CHANNEL
*       WEFA         0622           3
*       WEFA         0846           2
*
* NOTE: TODAY, 02/05/91, ALL MISSIONS HAVE
* BEEN TRANSFERRED FROM MET-4 TO MET-5.
* SLOT 17 WAS NOT SCANNED. FROM SLOT 18
* ONWARDS, MET-5 IS THE MISSION SATELLITE.
*
*
```

Fig. 1: METEOSAT-5 admin message from Peter de Jong.

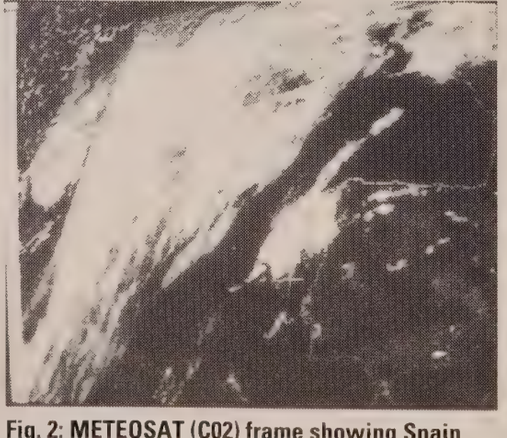


Fig. 2: METEOSAT (C02) frame showing Spain from Peter de Jong.

Frequencies

NOAAs 9, 11 a.p.t. on 137.62MHz
NOAAs 10, 12 on 137.50MHz
METEOR 2/19 on 137.85MHz
METEOR 3/4 on 137.30MHz
OKEAN 2 on 137.40MHz occasionally

Please note: NOAA 9 is switched off when its passes coincide with NOAA 11 and the same may occur with NOAAs 10 and 12. The METEORS are often swapped around each month as well!

Kepler Elements

A letter from **Dave Brown** of Port Erin expressed concern about the lack of Kepler elements in *Practical Wireless*. Recent changes to our sister magazine, have resulted in a sharp increase in the number of readers writing to me for elements. There is good news for those wanting element sets for the weather satellites and some others. I am now receiving weekly listings of these from Goddard Space Flight Center and can offer to make them available. The listings are supplied as follows: the weathersats alone can be provided in itemised form listing each parameter e.g. Epoch. Some other satellites are available in a printed form using the NASA 2-line element format. Anyone wanting the latest set should send me an s.a.e. (not just a stamp please) for the printout. Those who requested elements sets during late May will have received details of the new satellites.

FENGYUN 1B

The US Air Force has been tracking this Chinese weather satellite and reports that it is spinning about several axes at some 12 revolutions per minute.

INFORMATOR-1

I have received some reports of the signal heard on 145.815MHz and have heard this myself for some weeks. It is RS 14 (Radio Sputnik) a Russian amateur radio transponder that is attached to INFORMATOR 1, a converted navigation satellite which was recently referred to in this column.

Letters

Several letters have expressed an interest in seeing reviews of PC GOES and MEGANOAA and I hope to provide these when each has been tested. A number of regular correspondents have written, and Peter de Jong sent some more photographs. He also followed the oil slick in the Gulf using the infra-red pictures and suffers from paging interference on 137.30MHz (in Holland!) which others have also reported. Peter also heard the new

METEOR 3/4, has been monitoring METEOR3/3 and the faulty 2/20 as well. Three of his pictures are published here - thanks Peter. **Laurence Patton** sent me several photographs taken with his Amigasat system using version 1.11 software and I have included one here - **Fig. 4**.

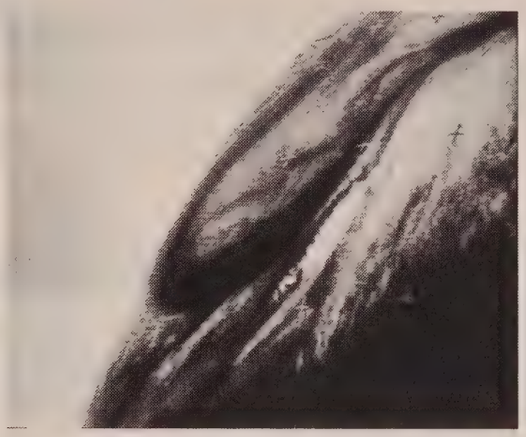


Fig. 3: METEOSAT water vapour image (E1 format) of the Atlantic from Peter de Jong.

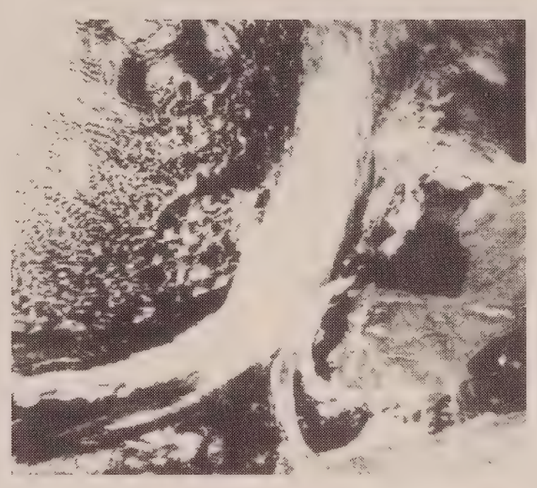


Fig. 4: A NOAA picture showing Spain and an Atlantic weather front from Laurence Patton.

Commodore

The Commodore Vic 20 was my very first home computer, back in the early eighties, and both **S Nicholson** of Walshaw and **Colin Button** were wondering whether anyone knows of satellite software for this machine? It would be possible to write predictions software, and a program written for the BBC or other computer could be converted, but unfortunately, even using the memory expansion pack the decoding and display of pictures requires considerably more memory. Colin wonders whether he might need to buy a BBC or Amstrad computer for which there are such programs available. I would recommend caution regarding such a purchase, unless a complete system was offered at a low price. If you are starting from scratch there is a large choice and the recent Weather Satellite Supplement can provide guidance.

Maplin receiver problems

Dave Brown is one of a large number of readers who have responded to my note requesting comments about the susceptibility of this receiver to paging interference. I have written to Maplin Electronics asking whether the company is proposing to modify its receiver to minimise this, but I am disappointed to report that after two letters and several weeks there has been no reply.

Dave tells me that he took my advice and bought a 286 computer, then purchased the Timestep Weather Systems VGASAT and lastly the Instant Track software. Fortunately he adds that it was the best decision that I could have made for him! **Tony Pattinson** of Reading cannot use his Maplin receiver on 137.85MHz because of the interference, but he mentions that he has an amplifier feeding about 7m of cable between his antenna and computer. For such a short distance a pre-amp shouldn't be necessary so the interference may be much reduced if the pre-amp is removed and the cable checked to ensure that it is good quality e.g. UR67, fitted with suitable connectors.

Tony also asks about high resolution imagery from the WXSATS. This is transmitted continuously from the NOAAs and regularly from the geostationary satellites, all using frequencies in the 1700MHz band. **Ron Harvey** of Weston-Super-Mare sent me some print-outs from his equipment which consists of a Maplin receiver, a BBC model B and Spectrum computers, plus many other receivers and hardware suitable for s.w.l. usage.

Where Is It?

Ron asks about the identification of details on satellite images. This is mostly down to recognising landmarks i.e. experience, but there are such superb 'helps' now (in the form of tracking programs) that no-one need be uncertain. When you have been monitoring pictures from NOAA satellites for a few weeks you will know roughly where they are when you first hear the signal. A morning pass starts with a view of the Iceland region and then continues over either Norway or the Atlantic, depending on whether it is the earlier or later pass. After a few minutes you will see western Europe (France, Germany etc) or the coast of Spain.

The evening pass is north bound and so starts with North Africa and then over the Mediterranean sea or Spain (depending on whether its the early or later pass), tracking north over France and Germany or Britain.

The NOAAs, being sun-synchronous, pass over these (and other) places within an hour or so each day. The Russian METEOR weather satellites also pass over every place on earth but at changing times because their orbits do not synchronise with the sun. The first pass of a sequence will still be over Greenland if south bound or North Africa if north bound, and so you can still expect to identify the land (or sea) below. The real challenge comes when a new Russian satellite is switched on. Without any guide-lines you need your experience and luck to recognise the scene below. This then tells you whether the satellite is north or south bound. More letters

Fellow Plymothian **A Wilkins** contacted me recently. He already has two scanners and is a regular s.w.l. and wanted some advice about the best way to enter WXSAT monitoring. Living nearby I invited him around for a chat. With so many possible alternatives it is a difficult choice to make. A long look at the available systems, their specifications and cost forms part of the process of choosing.

Phil Lee of Swansea is interested in the military satellites referred to in Peter Rouse's book *Scanners 2*. Geostationary satellites are located in orbits some 36 000km up (in the Clarke belt, named after Arthur C Clarke) so that their periods are 24 hours. METEOSAT-4 (MOP-1) is currently located at about 7° east and so is nearly due south near the Greenwich meridian.

The satellites referred to are at 23° west so they will be found in that belt located over longitude 23° that will be over the Atlantic. Finally, Phil made some kind comments about the recent supplement, as have many other correspondents - my thanks to you all. Using wide band f.m.

A plea for help came from **John Edwards** of Fife who has a Maplin antenna in his loft and about eight metres of cable feeding an R7000 receiver set to wide band f.m. John has only heard passes lasting about one minute and wonders what the problem might be. Receivers are very deaf to satellite signals when using wide band f.m. (which is designed for radio f.m. stations) and so to confirm that the system can detect satellite signals John should use the more sensitive narrow band (n.b.f.m.). He should then pick up reasonable signals. A simple dipole outside feeding the receiver might be useful. Its strength can then be compared with the crossed dipole which may be incorrectly phased. For good reception a purpose designed WXSAT receiver cannot be beaten.

I use a wide-coverage scanner fed by a discone and pre-amp to do most of my scanning and this invariably picks up the signals first, and then if I want to produce a picture I use my WXSAT receiver.

Philippe de Rochambeau is a student living in London who was wondering about tuning into satellites using a portable scanner and simple whip antenna. It should be possible to hear most of the polar satellites and just leaving the scanner tuned to a suitable frequency should prove successful - preferably outside! Several new *SWM* readers ask about starting off; **Nicholas Phillips** of Keswick wrote asking for lots of information about equipment. I believe the special Spring supplement - *Weather Watching* -, available for £1 from the Editorial Offices, answers all of these questions. Finally, **G Chance** of Redruth is now retired and while assembling receiving equipment he wonders how he ever found time to go to work!

Weathersats and the Gulf

Articles are appearing about the role of the weathersats during the Gulf War. I mentioned at the time that those using METEOSAT had a grandstand view of the smoke clouds and the oil slicks, and an article in *The Institute*, kindly sent to me by **Jan Nieuwenhuis** reveals just how important these pictures were for the monitoring of the slicks and the fires. On the Sunday morning at the start of the ground offensive I was taken aback by the huge smoke cloud all along the war front.

Correspondence

I welcome all letters on satellite matters, particularly the weather satellites but please check the weight of your envelope if you are enclosing anything else. I have had several packages arrive with insufficient stamps to cover postage resulting in my having to pay the excess or reject delivery - I don't want to do that!

long medium & short

Brian Oddy G3FEX, Three Corners, Merryfield Way, Storrington, West Sussex RH20 4NS

When packing your bags for that long awaited holiday, do remember to include a small portable receiver. Most small portables are capable of quite remarkable performance, so exploring the bands from that new location will be both interesting and rewarding.

Upon returning home, be sure to send along your findings for publication in LM&S, so that other DXers can share your experiences!

Long Wave Reports

Note: l.w. & m.w. frequencies in kHz; s.w. in MHz; Time in UTC (=GMT). Unless otherwise stated, all logs were compiled during the four week period ending May 9.

A new 600kW long wave transmitter is undergoing tests in Turkey on 225kHz. It is sited at Van and will radiate TRT Radio 1 to listeners in south and south-eastern Turkey. Detailed reception reports on the signals will no doubt be welcomed by the Turkish Radio-Television Corporation - see Station Addresses.

Some unusual variations in reception were noted after dark by **Phil Townsend** in E.London. On April 17 he found the signals from Konstantinow 225 and Topolna 270 down in the noise, but on the 18th they were SIO433 and 444 respectively. On both dates good signals were noted from Kaliningrad 171 and Oranienburg 177, whereas they are usually poor. The signal from Donebach 153 was in the noise, but Munich 207 on was SIO322, the reverse of the usual situation!

MW Transatlantic DX

Good reception from the Caribbean area was noted by **Jim Willett** in Grimsby. At 0200 he heard R.Paradise in Basseterre, St.Kitts on 825kHz and Greenville R. (ZDK) in St.Johns, Antigua on 1100, both SIO222. On 1610 the Caribbean Beacon, Anguilla was SIO222. He heard R.Antilles in Plymouth, Montserrat on 930 at 0250, but reception was marred by co-channel interference from CJYQ in St.John's, NF! At 0255 he noted R.Cayman in George Town, Cayman Is on 1555 as SIO222.

The first Canadian signal reached him at 0135, it was be CBM in Montreal, PQ on 940 and at SIO222. The strongest signal was CJYQ on 930, as SIO333 at 0150. Later, he logged CKLM in Montreal, PQ on 1570 as SIO233 at 0210 and CIGO Point Hawkesbury, NS 1410 as SIO233 at 0300.

Three broadcasts from New York were received between 0210 and 0230. They came from WINS on 1010, WNEW 1130 and WQXR 1560, all at SIO222. Also heard were WOGL in Philadelphia, PA 1210 and WLAM in Lewiston, ME 1470, both as SIO222. To get these results, Jim used a giant 4m square loop ahead of his RCA AR77 receiver.

Other MW DX

Although the shorter nights are not conducive to MW DXing after dark, some interesting sky wave signals can be logged. Around 0115 two of the broadcasts from Algeria were received some 1500km away in Co.Down by **Eddie McKeown**. He rated their 600/300kW transmissions from Alger on 891 and 981 as 34343 and 21222 respectively. Two more were logged at 0345 in N.London by **Ron Galliers**, Ain Beida 531 (600/300kW) as 44334 and Les Trembles 549 (600kW) as 22232.

MW Local Radio DX

The new outlet of ILR Beacon R. (WABC) via Shrewsbury on 1017kHz has been attracting attention. Reports indicate that the ground wave signal reaches many areas during daylight. It was rated 22222 at 0700 in N.London; 'clear but weak' at 0720 by **Robin Harvey** in Bourne; SIO444 at 1134 by **Bart O'Brien** in Co.Wexford; 'good' by **Roy Patrick** in Derby; SIO333 at 1345 by **Cyril Kellam** in Sheffield. In some areas their signal can be received via sky wave paths after dark. It was noted as 'loud and clear' in Lytham St. Annes by **Neil Wheatley**.

A visit to Bruges, Belgium enabled **Bill Griffith** (W.London) to explore the band from a new location. Using a Sony ICF-2002 portable he obtained good reception during daylight from ten UK local radio stations - see chart.

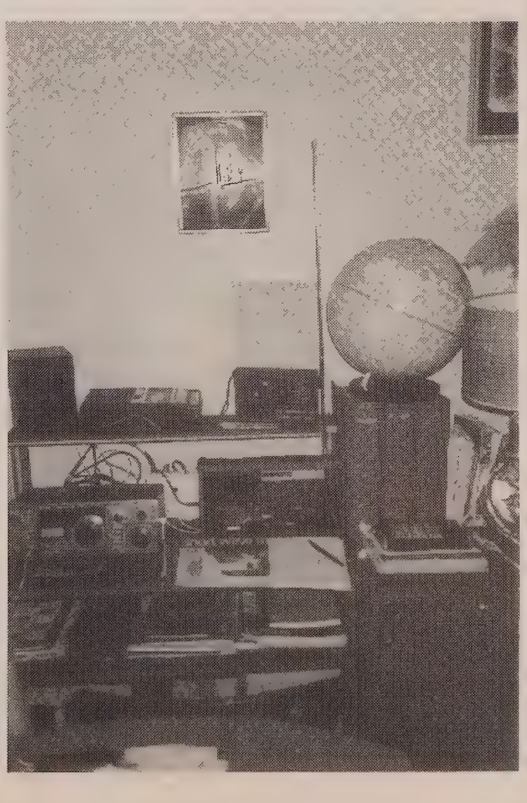
Short Wave Reports

The ionosphere has been frequently disturbed by the effects of solar flares, consequently some signals have been rendered poor or even impossible at times. The solar activity is continuing at a high level and further disturbances can be expected.

The **25MHz (11m)** band has been adversely affected by the solar activity and daily variations in reception have been evident. A marked deterioration in the strength of the signal from Radio Australia via Darwin on 25.750 (Eng to Middle East 0900-1100) was noted by **John Nash** in Brighton. The SIO333 quoted by **John Stevens** in Largs is typical, but at times their signal has been inaudible.

For much of the day, the u.s.b.+p.c. signals from HCJB in Quito on 25.950 have been audible in the UK. Using the synchronous detector in his new Sony ICF2001D portable, **Simon Hamer** rated their signal as SIO343 at 2130 in New Radnor. They have also been reaching Canada, where **Alan Roberts** (Quebec) logged them as 25222 at 0435UTC. He has also been hearing the Voice of the UAE in Abu Dhabi on 25.690, the best signal was 45555 at 1220. They resumed their 11m broadcasts in Arabic on April 16 and good reception is reported from many areas. Using a home-built, two valve, straight receiver in Bungay, **Ron Pearce** logged them as SIO444 at 1243.

Although intended for other areas, some R. Australia's **21MHz (13m)** signals have reached the UK. Their transmission to C/SE.Asia via Darwin 21.525 (Eng 0100-0800) was 34543 at 0625 by **David Edwardson** in Wallsend;



Cliff Stapleton's shack, also showing his invaluable editions of *SWM*.

Local Radio DX

Freq kHz	Station	IBA BBC	Power kW	DXer
558	Spectrum R.	I	7.50	B,H,I*,L,Q
585	R.Solway	B	2.00	N,Q,R*
603	Invicta Snd(Coast)	I	0.10	D*,I*,L,P
603	R.Gloucester	B	0.10	B,K,L
630	R.Bedfordshire	B	0.20	A,B,D,I,K,L
630	R.Cornwall	B	2.00	L,N
657	R.Clwyd	B	2.00	H,I,K,L,N,R*
657	R.Cornwall	B	0.50	B,L,N
666	DevonAir R.	I	0.34	B,I,L,N
666	R.York	B	0.80	I
729	BBC Essex	B	0.20	D,I,L,Q*
738	Hereford/Worcester	B	0.037	B,D,I,K,L,N,Q*
756	R.Cumbria	B	1.00	D,N
756	R.Shropshire	B	0.63	B,D,K,L,N
765	BBC Essex	B	0.50	A,B,E,I,L
774	R.Kent	B	0.70	A,D,E,I,L,P
774	R.Leeds	B	0.50	R*
774	Severn Sound (3CR)	I	0.14	B,K,L,N
792	Chiltern R.	I	0.27	B,D,E,I*,K,N,P,Q*
801	R.Devon	B	2.00	B,D,K,L,N
819	Hereford/Worcester	B	0.037	B,I,L,N
828	Chiltern Radio	I	0.20	A,B,D,I*,N,Q*
828	R.WM	B	0.20	B,K,N
828	2CR	I	0.27	B,L,N
837	R.Cumbria	B	1.50	B,N,R*
837	R.Leicester	B	0.45	B,D,I,L,N,P,Q*
855	R.Devon	B	1.00	B,L,N
855	R.Lancashire	B	1.50	D,N,R*
855	R.Norfolk	B	1.50	A,D,E,I,Q*
873	R.Norfolk	B	0.30	D,I,L,Q*
936	GWR (Brunel R.)	I	0.18	B,I,K,L,N
945	R.Trent (GEM-AM)	I	0.20	B,D,K,L,N,R*
954	DevonAir R.	I	0.32	B,I,L,N
954	R.Wyvern	I	0.16	K,N
990	WABC (Nice & Easy)	I	0.09	K
990	R.Devon	B	1.00	B,I,L,N
999	R.Solent	B	1.00	B,I,L
999	Red Rose R.	I	0.80	H,N,R*
1017	WABC (Shrewsbury)	I	?	B,D,F,J,K,M,N,Q,R*
1026	Downtown R.	I	1.70	N,R*
1026	R.Cambridgeshire	B	0.50	A,D,E,I,P,Q*
1026	R.Jersey	B	1.00	I,L,N
1035	R.Kent	B	0.50	D,E,I,L,Q*
1035	West Sound	I	0.32	N
1107	R.Northampton	B	0.50	D,I,L
1116	R.Derby	B	1.20	D*,G,N
1116	R.Guernsey	B	0.50	G,L,N
1152	BRMB (Xtra-AM)	I	3.00	K
1152	LBC (L.Talkback R)	I.	23.50	I*,L
1152	Piccadilly R.	I	1.50	R*
1152	Plymouth Sound	I	0.32	N
1152	R.Broadland	I	0.83	A
1152	R.Clyde (Clyde 2)	I	3.60	N
1161	GWR (Brunel R.)	I	0.16	I,K,N
1161	R.Bedfordshire	B	0.10	D
1161	R.Sussex	B	1.00	E,I,L
1161	R.Tay	I	1.40	N*
1170	Ocean Sound (SCR)	I	0.12	A,I*,L
1170	R.Orwell	I	0.28	D,N*
1170	Signal R.	I	0.20	N
1170	Swansea Sound	I	0.58	D*,N
1170	TFM Radio (GNR)	I	0.32	N*
1242	Invicta Snd(Coast)	I	0.32	D,E,G*,I*
1242	Isle of Wight R.	I	0.50	C,L
1251	Saxon R.	I	0.76	D,I,N*
1260	GWR (Brunel R.)	I	1.60	I,K,L
1260	Leicester (GEM-AM)	I	0.29	I
1260	Marcher Sound	I	0.64	H
1305	Red Dragon (Touch)	I	0.20	K,L,N
1323	R.Bristol	B	0.63	K,N
1323	Southern Snd (SCR)	I	0.50	I*,L,Q*
1332	Hereward R.	I	0.60	A,I,P,Q*
1332	Wiltshire Sound	B	0.30	I,K,L,N
1359	Essex R.(Breeze)	I	0.28	D,E,I,P
1359	Mercia Snd(Xtra-AM)	I	0.27	K
1359	R.Solent	B	0.85	L
1368	R.Lincolnshire	B	2.00	P
1368	R.Sussex	B	0.50	A,D,I,L
1368	Wiltshire Sound	B	0.10	L
1413	Sunrise R.	I	0.125	D,I*,L,Q*
1431	Essex R.(Breeze)	I	0.35	D,E,I,Q*
1431	Radio 210	I	0.14	A,I,L
1449	R.Cambridgeshire	B	0.15	P
1458	GLR	B	50.00	L
1458	GMR	B	5.00	H,R*
1458	R.Cumbria	B	0.50	N
1458	R.Devon	B	2.00	N
1458	Radio WM	B	5.00	A
1475	C'ty Snd(1st Gold)	I	0.50	C,D,I*,L
1485	R.Humberside	B	1.00	P
1485	R.Merseyside	B	1.20	H,N,R*
1485	R.Oxford	B	0.50	K,L
1485	R.Sussex	B	1.00	I,L
1503	R.Stoke-on-Trent	B	1.00	I,L,N
1521	R.Mercury	I	0.64	D,I*,L
1521	R.Nottingham	B	0.50	N
1530	R.Essex	B	0.15	C,I
1530	R.Wyvern	I	0.52	I,K,L,N
1548	Capital R. (Gold)	I	97.50	I*,L
1548	R.Bristol	B	5.00	K,N*
1548	R.City (City Talk)	I	4.40	N,R*
1557	Chiltern R.	I.	0.76	K,N
1557	Ocean Sound (SCR)	I	0.50	L
1557	R.Lancashire	B	0.25	N
1584	Gatwick	I	?	C,I*,L
1584	Heathrow	I	?	D,I*
1584	R.Shropshire	B	0.50	N
1584	R.Tay	I	0.21	N*
1602	R.Kent	B	0.25	I,L,Q*

Note: Entries marked * were logged during darkness.
All other entries were logged during daylight or at dusk.

DXers:
A: Ted Agombar, Norwich.
B: Darren Beasley, Bridgwater.
C: Ron Damp, Worthing.
D: Ron Galliers, London.
E: Bill Griffith, while in Bruges, Belgium.
F: Robin Harvey, Bourne.
G: Francis Hearne, Bristol.
H: Simon Holland, Douglas I.O.M.
I: Sheila Hughes, Morden.
J: Cyril Kellam, Sheffield.
K: Robert Lawrence, Cheltenham.
L: George Millmore, Wootton, I.O.W.
M: John Nash, Brighton.
N: Bart O'Brien, Co.Wexford.
O: Roy Patrick, Derby
P: Chris Shorten, Norwich.
Q: Phil Townsend, London
R: Neil Wheatley, Lytham St.Annes.

to C.Pacific, W.USA via Shepparton 21.740 (Eng 0030-0730) 32423 at 0609 by **Kenneth Reece** in Prenton; to Asia via Carnarvon 21.775 (Eng 0100-1000) 23322 at 0715 by **Jim Cash** in Swanwick; to SE.Asia, Middle East via ? 21.720 (Eng 1100-1330) SIO434 at 1105 by **John Coulter** in Winchester.

Good reception of the 13m signals to Europe was noted from R.Japan via Moyabi 21.575 (Eng 0700-0800) 54444 at 0700 by **Chris Shorten** in Norwich; R.Pakistan, Islamabad 21.520 (Eng 0800-0845) SIO444 at 0830 by **Bryan Kimber** in Hereford; Voice of Israel, Jerusalem 21.790 (Eng 1000-1030) 45554 at 1025 by **Ron Damp** in Worthing; WHRI Noblesville 21.840 (Eng 1500-1700 Sat/Sun, also to E.USA) 44333 at 1505 in N.London; UAE R.Dubai 21.605 (Ar, Eng 0615-1640, also to N.Africa) SIO222 at 1601 by **Julian Wood** in Elgin; RCI via Sackville 21.545 (Eng 1715-1730) SIO454 at 1715 in New Radnor; WYFR via Okeechobee 21.615 (Eng, Ger, It 1600-1900) SIO434 at 1845 by **Cliff Stapleton** in Torquay; HCJB Quito 21.455 (u.s.b.+ p.c. 0000-2400) SIO322 at 1320 in Bungay; also 21.480 (Ger, Eng, Sp 2100-2230) 44444 at 2131 by **Leo Barr** in Sunderland; VOFC Taipei, Taiwan 21.720 (Eng 2200-2300) 53433 at 2200 by **Noel Carrington** in Sutton in Ashfield.

Daylight Listening

In the morning, the BBC via Limassol 21.470 (Eng to E.Africa 0430-0730, 0730-0900*, 0900-1615 *Non daily) was logged as 24222 at 0440 in Quebec; R.Prague, Czechoslovakia 21.705 (Eng to Asia, Pacific 0730-0800) 35333 at 0745 by **Darren Beasley** in Bridgwater; BSKSA Riyadh 21.505 (Ar to N.Africa ?-1700) 45444 at 0830 in Derby; DW via Trincomalee 21.640 (Ger to E/S.E.Asia 0800-1400) SIO333 at 1000 by **Phil Cooper** in Guernsey; R.Moscow, USSR 21.785 (Eng to Middle East, Africa 0900-1500) 54444 at 1000 by **Sheila Hughes** in Morden; R.Austria Int. via Moosbrunn 21.490 (Eng to Australia 0800-1100) 43333 at 1052 by **Rhoderick Illman** in Thumrait, Oman; REE Spain 21.570 (Sp to C/S.America 0900-1900) 44444 at 1100 by **Antonio De Abreu-Teixeira** in Durham; Voice of the UAE in Abu Dhabi 21.735 (Ar 0200-1300) SIO455 at 1100 by **Kenneth Buck** in Edinburgh.

Later, DW via Julich 21.600 (Eng to C/E.Africa 1500-1550) was noted as SIO555 at 1528 by **Noel De Jager** in Cape Town; DW via Cyclops 21.680 (Eng to S.Asia 1600-1650) SIO444 at 1645 by **Bill Clark** in Rotherham; Vatican R, Rome 21.650 (Eng to Africa 1730-1800) SIO355 at 1730 by **Ken Willis** in Scarborough; BRT via Wavre 21.815 (Eng to Africa 1730-1755) 35534 at 1730 by **Darran Taplin** in Brenchley; WCSN Scotts Corner 21.640 (Eng to S.Africa 1800-2000) 44444 at 1800 by **Ted Agombar** in Norwich; VOA via Tangier 21.625 (Eng to Africa 1600-2200) 35553 at 1940 by **John Parry** in Northwich; WYFR via Okeechobee 21.525 (Ar, Fr, Port, Eng to W.Africa 1600-2300) 55555 at 2130 by **David Minter** in Portland.

Good DX reception has been noted in the **17MHz (16m)** band. Although meant for Pacific areas, the signals from R. New Zealand Int on 17.770 (Eng 2200-0730) have often reached the UK at remarkable strength in the early morning. In Northampton, **Alan Smith** rated them as 54444 at 0655. Later, R. Australia's transmission to S.Asia via Carnarvon on 17.630 (Eng 1430-1800) was noted as 44444 at 1511 in Brenchley.

On 17MHz

Among the 16m signals logged in the morning were RAI Rome 17.795 (Am, It, So to Africa 0415-0530) noted as 43433 at 0517 in Thumrait; R.Romania Int, Bucharest 17.745 (Eng to Africa 0530-0600) 33232 at 0538 by **Dick Moon** in George, S.Africa; R.Japan via Yamata 17.765 (Jap, Eng to Asia 0400-0800) 44434 at 0635 in Norwich; Vatican R, Rome 17.730 (Eng to Africa 0630-0700) 44554 at 0650 in Northwich; KHBI Saipan, N.Mariana Islands 17.780 (Eng to E.Asia 0400-0800) 23222 at 0651 in Prenton; R.Japan via Yamata 17.890 (Jap, Eng to Oceania 0500-0800), at 0700 in Sheffield; R.Pakistan, Islamabad 17.595 (Eng, Ur to Europe 0800-1120) 33343 at 0830 in Norwich; R.Cairo, Egypt 17.595 (Eng to S.Asia 1215-1330) SIO433 at 1300 in Hereford; R.Moscow Int, USSR 17.660 (Fr to ? 1300-?) 54444 at 1310 in Sutton in Ashfield.

Later, RTVM Tanger, Morocco 17.595 (Fr, Eng to Middle East, N.Africa 1500-1800) was 55555 at 1600 in Portland; R.RSA Johannesburg 17.790 (Eng to W.Africa 1700-1800) was heard at 1700 by **Denis Bosher** in Dolgellau; Vatican R, Rome 17.730 (Eng to Africa 1730-1800) SIO444 at 1730 in Cape Town; R.Suriname Int via RNB Brasilla 17.755 (Du, Eng to Europe 1700-1745) SIO212 at 1740 by **Philip Rambaut** in Macclesfield; RCI via Sackville 17.820 (Eng to Africa 1900-1930) SIO455 at 1915 in Edinburgh; HCJB Quito 17.790 (Cz, Ger, Sw, Eng, Sp to Europe 1800-2230) 32333 at 1952 in N.London; Voice of Israel, Jerusalem 17.575 (Eng to Africa, S.America 2130-2200) SIO434 at 2200 in Torquay; Voice of Turkey, Ankara 17.880 (Eng, Tur to SE.Asia 2200-0355) SIO343 at 2210 in Scarborough; VOFC Taipei via WYFR 17.750 (Eng to Europe 2200-2300) 24323 at 2226 in Sunderland.

In the **15MHz (19m)** band, some of R. Australia's signals were heard here. Their transmission to C.Pacific areas via Shepparton 15.160 (Eng, Fr 0000-1100) was 11221 at 1031 in Swanwick; to S.Pacific via Shepparton 15.240 (Eng 2200-0930) 23222 at 2212 in Bourne; to Asia via Shepparton 15.320 (Eng 2030-0800) SIO343 at 2200 in Torquay.

Good reception of the 19m signals to Europe was noted from the BBC via Limassol 15.590 (Eng 0400-0730) rated 45554 at 0700 in Northwich; HCJB Quito 15.270 (Eng 0700-0830) 55555 at 0702 in Norwich; R.Japan via Yamata 15.325 (Eng 0700-0800) 44333 at 0704 in Prenton; REE via Noblejas 15.240 (Sp 1000-1800) SIO444 at 1525 in Winchester; R.Korea, Seoul 15.575 (Eng 1800-1900, 2030-2130) 44433 at 1820 in Brenchley; WSHB Cypress Creek 15.610 (Eng 1800-2000) SIO433 at 1830 in Bungay; UAE R.Dubai 15.400 (Ar 1700-2050, also to N.Africa) SIO444 at 1955 in Edinburgh; Voice of Vietnam, Hanoi 15.010 (Fr, Sp, Eng, Ger 1800-2130) SIO333 at 2030 by **Alf Gray** in Birmingham; SLBC Colombo, Sri Lanka 15.120 (Eng 1830-2130), noted as 'loud and clear' at 2100 by **Colin Jermey** in Ruislip; VOA via Tangier 15.205 (Eng 1700-2200) 23122 at 2153 in Sunderland; WWCR Nashville 15.690 (Eng, Sp 1200-0000) 43334 at 2300 in Durham; VOIRI Tehran, Iran 15.084 (Ar, Fa, Sp 1830-0230, also to USA), noted as 'very good' at 2339 by **Charles Beanland** on Gibraltar.

A few to other areas were heard in the early morning: R.Nederlands via Bonaire 15.560 (u.s.b. + p.c. tests 0030-?) SIO454 at 0030 in New Radnor; R.Norway Int, Oslo 15.360 (Norw, Eng* to USA 0100-0130, *Sat/Sun only) 43333 at 0100 in Morden; HCJB Quito 15.155

Freq kHz	TX Location	Country	Power kW	DXer
531	Ain Beida	Algeria	600	E*,G*,M*
531	Leipzig	Germany	100	B,K
540	BRT-2 Wavre	Belgium	150/50	B,E,G*,K,L,O*
540	Sidi Bennour	Morocco	600	G*
549	Les Trembles	Algeria	600	E*,G*
549	Nordkirchen	Germany	100	B,E,G*,K,O*
558	Valencia	Spain	20	B
567	RTE-1 Tullamore	Ireland (S)	500	B,D,E,G*,K,M*,O*
576	Stuttgart	Germany	500	B,M*
585	FIP Paris	France	8	B,K
585	RNE-1 Madrid	Spain	200	E*
594	Frankfurt	Germany	400	A,B,E*,K
603	Lyon	France	300	B
603	BBC-R4 Newcastle	UK	2	A
612	RTE-2 Athlone	Ireland (S)	100	B,D*,E,K
621	RTBF-1 Wavre	Belgium	80	B,E,K,O*
639	La Coruna	Spain	100	B,E*
648	BBC Orfordness	UK	500	A,B,E,G*,K
657	RCE-2 Madrid	Spain	20	E
657	BBC-R.Wales Wrexham	UK	2	G
675	Marseille	France	600	B,E*
675	Hilversum-3 Lopic	Holland	120	B,E,G,K,L,O*
684	RNE-1 Sevilla	Spain	250	E*
693	Berlin	Germany	250	E*
693	BBC-R5 Droitwich	UK	150	F
711	Rennes 1	France	300	B,E,K,O*
720	BBC-R4 Lisnagarvey	Ireland (N)	10	B
720	BBC-R4 Lots Rd London	UK	0.5	K
729	RTE-1 Cork	Ireland (S)	10	D*
729	Oviedo	Spain	50	B,M*
738	Poznan	Poland	300	K
738	RNE-1 Barcelona	Spain	250	E*,M*
747	Hilversum-2 Flevo	Holland	400	B,E,G,K,L,M*,O*
756	Brunswick	Germany	800/200	B,E*
774	RNE-1 San Sebastian	Spain	60	B
783	Burg	Germany	1000	B,E*,K,M*
792	Limoges	France	300	B
792	VOA via Kavala	Greece	500	H*
801	Munich	Germany	420	B
810	BBC-Scot.Westerglen	UK	100	B,D,E,K
846	Rome	Italy	540	E*
855	Murcia	Spain	125	E
864	Paris	France	300	E,K,O*
873	AFN via Frankfurt	Germany	150	E,M*
882	BBC-Wales Washford	UK	70	E,G,K,L,O*
891	Algiers	Algeria	600/300	G*,J*,K,M*
891	Hulsberg	Holland	20	G*
900	Milan	Italy	600	E*
918	R.Intercont. Madrid	Spain	20	E
927	BRT-1 Wolvertem	Belgium	300	E,K,O*
936	Bremen	Germany	100	E
963	Paris	France	8	K
972	Hamburg	Germany	300	E*,K,M*
981	Alger	Algeria	600/300	E*,G*,J*,M*
1008	Hilversum-5 Flevo	Holland	400	E,G,K,L,M*,O*
1017	Wolfsheim	Germany	600	E*,M*,N*
1044	Burg	Germany	250	E*
1053	BBC-R1 Droitwich	Uk	150	F
1071	Brest	France	20	K
1125	La Louviere	Belgium	20	K
1134	Valencia	Spain	10	G*
1134	Zadar	Yugoslavia	1200	C,G*
1143	AFN via Stuttgart	Germany	10	E*
1161	Strasbourg (F.Int)	France	200	C,E*
1179	Solvesborg	Sweden	600	C,E*,G*,M*
1188	Kuurne	Belgium	5	E*,K
1197	VOA via Munich	Germany	300	E*
1197	BBC-R3 Bournemouth	UK	0.5	K
1197	BBC-R3 Cambridge	UK	0.25	E
1215	BBC-R3 Moorside Edge.	UK	100	F
1233	Melnik	Czechoslovakia	400	E*,M*
1251	Huisberg	Netherlands	10	G*
1260	VOA via Rhodes	Greece	500	H*
1260	Valencia	Spain	20	E*
1269	Neuminster	Germany	600	E*
1278	RTE-2 Dublin/Cork	Ireland (S)	10	D*,I
1296	BBC Orfordness	UK	500	F
1314	Kvitsoy	Norway	1200	E*,K,M*
1323	R.Moscow via Leipzig.Germany		150	E*
1332	Rome	Italy	300	E*
1341	BBC-Uist.Lisnagarvey.Ireland (N)		100	E*,G*,M*
1350	Nancy/Nice	France	100	E*
1377	Lille	France	300	K,O*
1404	Brest	France	20	E*,K
1422	Heusweiler	Germany	1200/600	E*,M*
1440	Marnach	Luxembourg	1200	E*,K,M*
1467	TWR Monte Carlo	Monaco	1000/400	G*
1476	Wien-Bisamberg	Austria	600	E*
1494	Leningrad	USSR	1000	E*
1503	Stargard	Poland	300	D*,G*
1512	BRT Wolvertem	Belgium	600	E*,G*,K,O*
1530	Vatican Radio, Rome	Italy	150/450	E*,G*,M*
1539	Mainflingen	Germany	700	E*,K
1566	Sarnen	Switzerland	300	E*
1566	Sfax	Tunisia	1200	E*
1575	Burg	Germany	250	E*
1593	Langenberg	Germany	400/800	E*,G*,K,M*,O*
1602	SER R.Cartagena	Spain	2	G*
1602	R.Onteniente	Spain	2	G*
1611	Vatican Radio, Rome	Italy	5	G*
1620	Verona	Italy	5	N*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dusk.

DXers:
A: Ted Agombar, Norwich.
B: Darren Beasley, Bridgwater.
C: Jim Cash, Swanwick.
D: Bill Clark, Rotherham
E: Ron Galliers, London
F: Bill Griffith, while in Bruges, Belgium.
G: Sheila Hughes, Morden.
H: Rhoderick Illman, Thumrait, Oman.
I: Robert Lawrence, Cheltenham.
J: Eddie McKeown, Co.Down.
K: George Millmore, Wootton I.O.W.
L: Chris Shorten, Norwich.
M: Cliff Stapleton, Torquay.
N: John Stevens, Largs.
O: Phil Townsend, London.

Freq kHz	TX Location	Country	Power kW	DXer
153	Bechar	Algeria	1000	F
153	Donebach	Germany	500	B,C,E*,G*,H,I,J
153	Brasov	Romania	1200	A,G*
162	Allouis	France	2000	A,B,C,E*,F,G*,H,I,J,K*
171	Kaliningrad	USSR	1000	A,B,C*,G*,H,J,K*
177	Oranienburg	Germany	750	A,B,C,E*,F,G*,H,J,K*
183	Saarlouis	Germany	2000	B,C,E*,F,G,H,I,J,K*
189	Motala	Sweden	300	B,C*
198	BBC Droitwich	UK	500	A,C,D,E*,F,G*,H,I,K*
198	BBC Westerglen	UK	50	B
207	Munich	Germany	500	A,B,C*,G*,H,I,J,K*
216	Roumoules	Monaco	1400	B,C,F,G*,H,I,J,K*
216	Oslo	Norway	200	B,E*,G*
225	Konstantinow	Poland	2000	A,B,C*,E*,G*,H,I,J,K*
234	Junglinster	Luxembourg	2000	B,C,F,G*,I,J,K*
243	Kalundborg	Denmark	300	A,B,C,E*,G*,H,I,J,K*
252	Tipaza	Algeria	1500	E*,G*,H,J*
252	Atlantic 252	S.Ireland	500	A,B,C,D*,E*,F,G*,H,I,J,K*
261	Burg	Germany	200	C,G*,H,K*
261	Moscow	USSR	2000	B,E*,F,J
270	Topolna	Czechoslovakia	1500	A,B,E*,F,G*,H,I,J,K*
279	Minsk	USSR	500	B,C*,F,G*,H,J*

Note: Entries marked * were logged during darkness. All other entries were logged during daylight or at dusk.

(Eng to USA 0030-0700) 23232 at 0310 in Co.Down; UAE R.Dubai 15.435 (Ar, Eng to USA 0230-0400) 35533 at 0340 in Wallsend; RFO Papeete, Tahiti 15.170 (Fr, Tah to SE.Pacific 1600-0930) SIO322 at 0515 in Grimsby; VOA via Munich 15.195 (Eng to Middle East 0800-1000) 54444 at 0955 in Worthing.

Many more were heard later, including the Voice of Greece, Athens 15.650 (Gr, Eng to USA 1200-1250) SIO555 at 1240 in Scarborough; R.Romania Int, Bucharest 15.365 (Ar to N.Africa 1230-1300) SIO444 in Rotherham; Voice of Vietnam, Hanoi 15.010 (Fr, Eng to S.E.Asia 1300-1400) 33333 by **Malcombe Goodman** in Leeds; R.Finland via Pori 15.400 (Fin, Sw, Eng to USA 1215-1445) SIO555 at 1330 in Guernsey; AIR via Aligah 15.020 (Sin to S.Asia 1300-1500) SIO223 at 1423 by **Ted Walden-Vincent** in Gt.Yarmouth; Voice of Malaysia, Kajang 15.295 (Ar, Mal to S.Asia 1530-1900) SIO333 at 1530 by **Zacharias Liangas** in Zaria, N.Nigeria; R.Beijing, China 15.165 (Eng to S.Asia 1400-1600) 53343 at 1540 in Norwich; RSA Johannesburg 15.210 (Eng to Africa 1500-1800) SIO433 at 1700 in Hereford; FEBA Seychelles 15.120 (Fa to Iran 1800-1830) 32343 at 1800 in Northampton; R.Nederlands via Talata Volon 15.570 (Eng to C/S.Africa 1830-1925) 44433 in Thumrait; REE via Noblejas 15.375 (Eng to Africa 1900-2000) SIO555 in Cape Town; R.Japan via Yamata 15.230 (Eng, Jap to Asia 2100-0000) SIO222 at 2305 in Elgin; KTBN Salt Lake City 15.590 (Eng to USA 1500-0100) 32323 at 2307 in N.London; R.Sofia, Bulgaria 15.330 (Fr, Eng to USA 2230-0000) 54555 at 2310 in Portland; Voice of Israel, Jerusalem 15.640 (Eng to USA 2300-2330) SIO433 at 2315 by **Francis Hearne** in Bristol.

The 13MHz Band

The occupants of the **13MHz (22m)** band were joined by R. New Zealand Int. on May 12. Their broadcast to Pacific areas on 13.785 (Eng 1800-2211, Sun to Fri) may be heard in the UK. Strong signals from R. Australia have reached the UK via Carnarvon 13.745 (Eng to S.Asia 1530-2100), 53433 at 1822 in Swanwickand in Cape Town at SIO333; via Shepparton 13.605 (Eng to Pacific areas 1700-2130), SIO434 at 2110 in Torquay; via Carnarvon 13.705 (Eng to Asia 2100-2300), SIO423 at 2110 in Macclesfield; via Darwin 13.605 (Chin, Eng to C.Asia 2200-0000), SIO444 at 2200 in Birmingham.

The other occupants include UAE R.Dubai 13.675 (Ar, Eng to USA 0230-0400) 44444 at 0330 in Morden; DW Cologne 13.610 (Eng to W.Africa 0600-0650) 34333 at 0610 in Prenton; BRT via Wavre 13.675 (Du to Africa 0600-0655) 54444 at 0630 in Norwich; SRI via Sottens 13.685 (It, Ger, Fr, Eng to Pacific 0745-1030) SIO544 at 1000 in Guernsey; KSDA Agat, Guam 13.720 (Eng, Ind, Tag to Asia 1000-1300) 43333 at 1258 in Thumrait; ISBS Reykjavik, Iceland 13.830 (Ic to Europe 1215-1245) SIO454 at 1225 in New Radnor; SRI via Sottens 13.635 (Eng to Pacific areas 1330-1400) SIO444 at 1330 in E.London; R.Austria Int via Moosbrunn 13.730 (Ger, Fr, Eng, Sp to Europe 0400-1700) 44344 at 1438 in N.London; UAE R,Dubai 13.675 Ar, Eng to Europe 1600-2100) SIO555 at 1630 in Edinburgh; R.Nederlands via Flevo 13.700 (Eng to W.Africa 2030-2125) 44444 at 2030 in Co.Down; KHBI Saipan, N.Mariana Islands 13.625 (Eng to Australia, Pacific areas 1800-2200) 25323 at 2155 in Bridgwater; WHRI Noblesville 13.760 (Eng to USA, Europe 1600-0000) 43333 at 2230 in Portland.

Some of the **11MHz (25m)** broadcasts to Europe were noted in the reports: HCJB Quito 11.835 (Cz, Sw, Ger, Fr, Eng 0500-0830) rated 53343 at 0750 in Norwich; R.Romania Int, Bucharest 11.940 (Eng 1300-1400) SIO544 at 1300 in Scarborough; Vatican R, Rome 11.740 (Eng 1445-1500) 33333 at 1445 in Portland; R.Pakistan, Islamabad 11.570 (Eng, Ur 1700-1900) 33333 at 1843 in N.London; R.Damascus, Syria 12.085 (Eng 2005-2105, also to USA) SIO444 in Sheffield; Voice of Greece, Athens 11.645 (Gr, Eng 1500-1550, also to USA) SIO333 at 1530 in Rotherham; AIR via Aligarh 11.620 (Hi, Eng 1845-2230) SIO322 at 2145 in Guernsey; R.Sofia, Bulgaria 11.660 (Eng 2030-2100) 32323 at 2044 in Bourne.

DXers:
A: Ted Agombar, Norwich.
B: Kenneth Buck, Edinburgh.
C: Ron Galliers, London.
D: Bill Griffith, while in Bruges, Belgium.
E: Sheila Hughes, Morden.
F: Patrick McKeever, Birmingham.
G: Eddie McKeown, Co.Down.
H: George Millmore, Wootton, I.O.W.
I: Bart O'Brien, Co.Wexford.
J: Fred Pallant, Storrington.
K: Phil Townsend, London.

Others Heard

Also heard were TWR Bonaire, Ned.Antilles 11.930 (Eng to C.America, USA 0255-0400) as 43333 at 0300 in Morden; RHC Havana, Cuba 11.820 (Eng to USA 0200-0400) 32232 at 0313 in Co.Down; VOA via Greenville 11.935 (Sp to S.America 0930-1130) SIO322 at 1035 in Macclesfield; R.Sweden via Horby 11.960 (Eng to Asia, Australia 1130-1200) SIO544 at 1135 in Hereford; R.Japan via Yamata 11.815 (Jap, Eng to S/E.Asia 1000-1500), noted as 'good' at 1150 in Gibraltar; Voice of the Mediterranean, Malta 11.925 (Eng to N.Africa 1400-1600) SIO333 at 1500 in Gt.Yarmouth; KTWR Agana, Guam 11.650 (Eng to S.Asia 1445-1700) 33233 at 1530 in Bridgwater; R.Beijing, China 11.445 (Nep, Ur to S.Asia 1500-1655) SIO434 at 1626 in Winchester; R.Austria Int via Moosbrunn 11.780 Ger, Eng, Fr, to S.Asia 1400-1700) SIO322 at 1631 in Elgin; RFI via Moyabi, Gabon 12.015 (Eng, Port to Africa 1600-1800) SIO444 at 1635 in Cape Town; KSDA Agat, Guam 11.980 (Eng to S.Asia 1600-1700)

DXers:
A: Ted Agombar, Norwich.
B: Leo Barr, Sunderland.
C: Charles Beanland, Gibraltar.
D: Bill Clark, Rotherham.
E. Antonio De Abreu-Teixeira, Durham.
F: Noel De Jager, Cape Town, S.Africa.
G: David Edwardson, Wallsend.
H: Ron Galliers, London.
I: Malcolm Goodman, Leeds.
J: Bill Griffith, while in Bruges, Belgium.
K: Sheila Hughes, Morden.
L: Rhoderick Illman, Thumrait, Oman.
M: Eddie McKeown, Co.Down.
N: Dick Moon, George, S.Africa
O: Bart O'Brien, Co. Wexford
P: Sergei Oleynik, Kalush, Ukraine
Q. Fred Pallant, Storrington.
R: Roy Patrick, Derby
S. Chris Shorten, Norwich.
T: Alan Smith, Northampton
U: Cliff Stapleton, Torquay
V: Darran Taplin, Brenchley
W. Phil Townsend, London.
X. Ted Walden-Vincent, Gt.Yarmouth
Y: Jim Willett, Grimsby

Tropical Bands

Freq kHz	Station	Country	UTC	DXer
2.360	R.Maya de Barillas	Guatemala	2321	M
3.215	R.Orange	S.Africa	1745	H,P
3.240	TWR	Swaziland	1800	P
3.255	BBC via Maseru	Lesotho	1825	H,L,P
3.270	SWABC 1, Namibia	S.W.Africa	1653	L
3.290	SWABC 2, Namibia	S.W.Africa	1650	L
3.295	Reykjavik	Iceland	0450	H
3.315	SLBS Freetown	Sierra Leone	2000	G,O,P,Y
3.330	R.Kigali	Rwanda	2028	Q
3.355	R.Nac.Luanda	Angola	2205	Y
3.355	AIR Kurseong	India	1700	P
3.365	R.Rebelde	Cuba	0115	H,Y
3.365	GBC Radio 2	Ghana	2100	G,H,M,O,P,Q,U,V
3.905	AIR Delhi	India	1629	L,M,P
3.915	BBC Kranji	Singapore	1927	H,L,M,P,Q,U,V,X,Y
3.940	PBS Hubei Wuhan	China	2122	P
3.955	BBC Daventry	England	1900	H,J,L,M,U,V,W
3.965	RFI Paris	France	2004	H,K,M,V,W
3.970	Nei Menggu, Hohhot	China	2125	P
3.980	VOA Munich	W.Germany	2005	H,K,M,W
3.985	R.Beijing, China	via SRI Berne	2100	M,P,U,V
3.985	SRI Berne	Switzerland	1900	A,H,L,M,S,U,V
3.990	V. of Pujiang	China	2325	P
3.995	DW Cologne (Julich)	W.Germany	2125	H,M
4.055	R.Moskva 1 (Kalinin)	USSR	2050	Y
4.220	PBS Xinjiang	China	2320	G,K,P
4.460	CPBS 1 Beijing	China	2130	M,P
4.485	R.Moskva (Ufa)	USSR	0150	Y
4.500	Xinjiang	China	2320	G
4.545	Alma Ata	USSR	1853	P
4.600	R.Baghdad	Iraq	2240	R
4.635	R.Dushanbe Tadzhik	USSR	1858	P
4.735	Xinjiang	China	2225	D,G,K,M
4.740	R.Afghanistan	via USSR	1900	P,W
4.750	R.Bertoura	Cameroon	2020	P,Q
4.755	R.Educ CP Grande	Brazil	0040	E
4.760	Yunnan Kumming	China	2154	P
4.760	R.Moscow (Dushanbe)	USSR	1800	H,S
4.765	Brazzaville	Pep.Rep.Congo	2019	D,G,H,P,Q,V
4.770	FRCN Kaduna	Nigeria	2019	B,G,H,M,P,Q,V
4.775	Kabul City Service	Afghanistan	1800	Y
4.780	RTD	Djibouti	1830	Y
4.785	RTM Bamako	Mali	2348	P
4.785	R.Tanzania	Tanzania	1900	Y
4.785	R.Baku	USSR	2015	Q
4.790	R.Atlantida	Peru	0200	Y
4.790	TWR Manzini	Swaziland	2019	P,Q
4.795	R.Douala	Cameroon	2015	M,P,Q,U
4.795	R Moscow (Kharkov)	USSR	2130	K
4.800	AIR Hyderabad	India	1547	L
4.800	LNBS Lesotho	Maseru	2019	P,Q
4.805	R.Nac.Amazonas	Brazil	2302	H,Y
4.810	R.Moskva 1 (Yerevan)	USSR	2010	M,Q
4.815	R.diff TV Burkina	Ouagadougou	2020	G,Q
4.820	La Voz Evangelica	Honduras	0340	P
4.820	R Moskva 4 (Khanty-M).	USSR	2012	H,K,Q
4.825	R Moscow	USSR	2022	H,M,Q
4.830	Gaborone	Botswana	1835	Q
4.830	R Tachira	Venezuela	0100	H,K,P
4.832	R Reloj	Costa Rica	0635	G
4.835	RTM Bamako	Mali	2022	B,G,H,K,M,P,Q,R,U,V
4.840	R.Valera, Trujillo	Venezuela	0510	Y
4.845	RTM Kuala Lumpur	Malaysia	0122	P
4.845	ORTM Nouakchott	Mauritania	2022	H,M,Q
4.850	R.Yaounde	Cameroon	2022	C,H,K,M,P,Q,R,V
4.850	AIR Kohima	India	1819	Q
4.860	AIR New Delhi	India	1900	P
4.865	PBS Lanzhou	China	2210	P
4.865	V of Cinaruco	Colombia	0445	G,H
4.870	R.Cotonou	Benin	1916	H,P,Q,U
4.875	R.Tbilisi	USSR	1911	H
4.885	R.Clube do Para	Brazil	0120	Y
4.885	Voice of Kenya	Kenya	1850	P,Q
4.895	R.Moscow (Kalinin)	USSR	2300	H,S,V
4.895	R.Moskva 4 (Tyumen)	USSR	2326	K,M
4.900	V. of the Strait 2	China	2115	P,Y
4.905	R.Nat.N'djamena	Chad	1918	H,M,P,Q,U,V,Y
4.910	V of People Kampuchea.	Cambodia	1450	L
4.910	R.Zambia, Lusaka	Zambia	1925	F,Q,V
4.915	R.Anhanguera	Brazil	0010	E,P
4.915	R.Ghana, Accra	Ghana	2012	E,G,H,Q,V
4.915	Voice of Kenya	Kenya	1815	Q
4.920	ABC Brisbane	Australia	1922	Q
4.920	AIR Madras	India	1646	P
4.930	R.Moscow	USSR	2330	H,K,M
4.934	Voice of Kenya	Kenya	1827	G,I,O,P,Q,T,U,V,W
4.940	R.Kiev 2	USSR	1940	M,Q,U
4.940	R.Continental,Barinas.	Venezuela	0220	P
4.950	R.Nac.Luanda	Angola	1921	Q
4.955	R.Marajoara, Belem	Brazil	0455	G
4.960	AIR New Delhi	India	0048	P
4.960	R.Baku	USSR	2021	M
4.970	R.Rumbos, Caracas	Venezuela	0035	Y
4.975	R.Uganda, Kampala	Uganda	1921	Q,V,Y
4.980	Ecos del Torbes	Venezuela	0030	E,P
4.985	R.Brazil Central	Brazil	0430	Y
4.990	AIR via Madras	India	2359	V
4.990	FRCN Lagos	Nigeria	2301	V
4.990	R.Moscow (Yerevan)	USSR	2159	M
5.005	R.Nacional, Bata	Eq.Guinea	1950	E,H,M,P,Q,R,U.
5.010	R.Garoua	Cameroon	1953	P,Q
5.010	R.Malagasy	Madagascar	1900	Y
5.020	ORTN Niamey	Niger	2003	G,P
5.025	ABC Katherine	Australia	2215	N
5.025	R.Uganda, Kampala	Uganda	1905	P
5.030	R.Catolica, Quito	Ecuador	0134	E,P
5.035	R.Aparecida	Brazil	2300	E
5.035	R.Alma Ata	USSR	1931	H,P
5.040	Vos del Upano, Macas	Ecuador	0140	P
5.045	R.Cultura do Para	Brazil	2321	E,M
5.047	R.Togo, Lome	Togo	1923	G,H,P,Q,V,Y
5.050	V. of the Strait 1	China	2136	P
5.050	SBC Singapore	Singapore	2210	N
5.055	Faro del Caribe	Costa Rica	0330	Y
5.060	PBS Xinjiang	China	0030	P
5.065	R.Candip, Bunia	Zaire	1943	P,Q
5.075	Caracol Bogata	Colombia	0415	Y
5.145	R.Beijing	China	1400,L	
5.260	R.Alma Ata 2	USSR	2149	M
5.275	WYFR Oakland, CA	via Taiwan	1425	L
5.290	R.Moundou	Chad	1950	P
5.290	R Moskva 1Krasnoyarsk.	USSR	1941	H
5.440	PBS Xinjiang	China	0040	P

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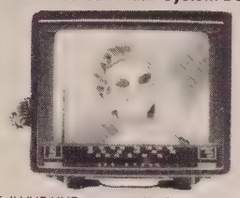

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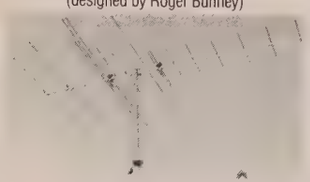

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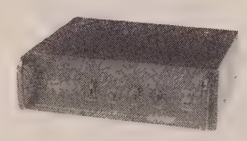

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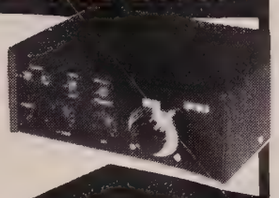

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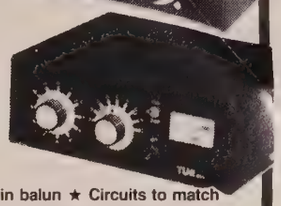

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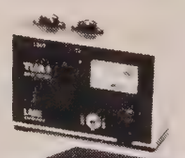

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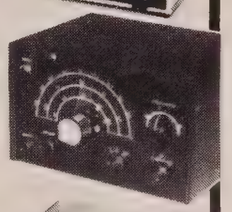

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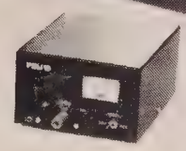

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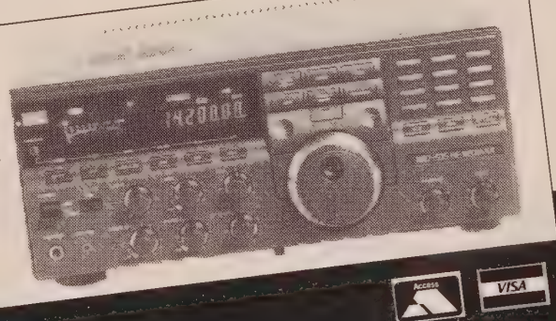

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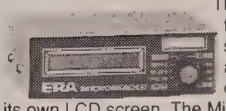

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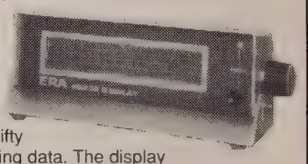

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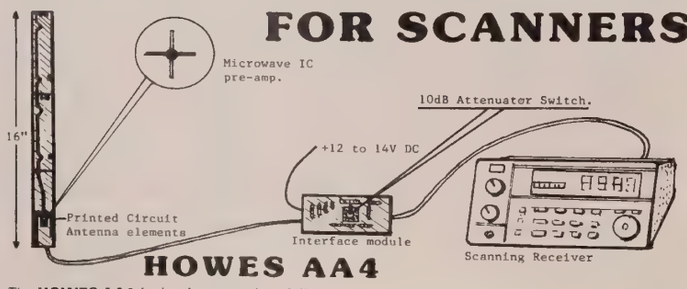

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73 from Dave G4KQH, Technical Manager.

44344 at 1638 in Northampton and 32332 in Thumrait, Oman; Voice of Greece, Athens 11.645 (Gr, Eng to S.Africa 1800-1850) SIO333 at 1805 in Zaria, N.Nigeria; R.Budapest, Hungary 11.910 (Eng to ? 1830-1900) 54444 at 1830 in Brenchley; R.Yugoslavia, Belgrade 11.735 (Eng to Africa ?-2145) SIO455 at 2140 in New Radnor; Voice of Israel, Jerusalem 11.655 (Eng to W.USA 2130-2200) SIO443 at 2155 in Birmingham; R.Vilnius, Lithuania 11.770 (Eng to USA 2300-2330) SIO444 at 2315 in Bristol; RAE Buenos Aires, Argentina 11.710 (Sp, Eng, Fr to USA 0005-0400) 33333 at 0100 in Durham; R.El Espectador, Uruguay 11.835 (Sp to S.America 1000-0300) SIO222 at 0130 in Grimsby.

The **9MHz (31m)** broadcasts from R.New Zealand Int via Rangitaiki on 9.700 (Eng to Pacific areas 0730-1210) have often reached the UK. In Prenton they were 33333 at 0730. The logs included IRRS Milan, Italy 9.815 (Eng to Europe 0530-0930) 33433 at 0915 in Leeds; DW via Cyclops 9.545 (Ger to S.Asia 1200-1400) 45554 at 1245 in Wallsend; BRT via Wavre 9.925 (Eng to Europe 1730-1755) SIO222 at 1737 in Elgin; FEBC Philippines 9.845 (Russ to USSR 1600-1900) SIO322 at 1740 in Macclesfield; R.Sofia, Bulgaria 9.700 (Eng to Europe 2030-2100) SIO233 at 2050 in Gt.Yarmouth; VOA via Kavala 9.700 (Eng to Europe, Middle East, N.Africa 2100-2200) 54444 at 2130 in Worthing; VOIRI Tehran, Iran 9.022 (Ger, Fr, Eng, Sp, Ar to Europe 1800-2230) SIO343 at 2215 in Zaria, N.Nigeria; R.Cairo, Egypt 9.900 (Eng 2115-2245) SIO433 in Torquay and 22222 in George, S.Africa; R.Nacional, Paraguay 9.735 (Sp to S.America 0800-0300) SIO433 at 2148 in Sheffield; R.Yugoslavia, Belgrade 9.620 (Sp to C.America 0000-0030) SIO444 at 0000 in Bristol.

Four broadcasts from the USA were logged in the **7MHz (41m)** band: WRNO New Orleans 7.355, noted as 33333 at 0040 in Morden; KTBN Salt Lake City 7.510, as 44333 at 0558 in Northampton; WWCR Noblesville 7.520, as SIO444 at 0620 in Grimsby; WHRI Noblesville 7.315, as SIO333 at 0740 in Macclesfield.

The **6MHz (49m)** broadcasts from R.Riga, Latvia 5.935 (Eng 0600-0630 Sun, 1730-1800 Sat) were both rated SIO544 in Hereford. R.Kiev, Ukraine 6.010 was rated 53543 at 2150 in Bridgwater.

Equipment Used

Ted Agombar, Norwich: Grundig Satellit 400 + r.w.
Leo Barr, Sunderland: Matsui MR-4099 or Steepletone MBR7 + r.w. in loft.
Darren Beasley, Bridgwater: Philips D2935 + Hex loop or a.t.u. + 10m wire.
Charles Beanland, Gibraltar: Sangean ATS 803 + active antenna.
Denis Bosher, Dolgellau: Matsui MR-4099 + single loop or r.w.
Kenneth Buck, Edinburgh: Lowe HF225 + r.w. in loft or loop.
Noel Carrington, Sutton in Ashfield: Saisho SW5000 + a.t.u. + G5RV antenna.
Jim Cash, Sanwick: Kenwood R5000 + trap dipole.
Bill Clark, Rotherham: Sony ICF-SW7600 + built-in whip.
Phil Cooper, Guernsey: Racal RA17 + r.w.
John Coulter, Winchester: Yaesu FRG-7 + r.w.
Ron Damp, Worthing: Racal RA17 + 30m inverted V dipole or whip.
Antonio De Abreu-Teixeira, Durham: Saisho 2000 or Sony ICF-SW 7600 + r.w.
Noel De Jager, Cape Town, S.Africa: Philips D2935 + 20m wire.
David Edwardson, Wallsend: Trio R600 + inverted V trap dipole.
Ron Galliers, London: Philips D2935 + built-in whip or 30m wire.
Malcolm Goodman, Leeds: Lowe HF-225 + a.t.u. + 90m wire.
Alf Gray, Birmingham: Codar CR70 + PR30 + a.t.u. + Ex-Army whip.
Bill Griffith, while in Bruges, Belgium: Sony ICF 2002 + built-in antenna.
Simon Hamer, New Radnor: Sony ICF-2001D + loop.
Robin Harvey, Bourne: Matsui MR 4099 + s.w. loop.
Francis Hearne, Bristol: Sharp GFA3 cassette radio + r.w.
Simon Holland, Douglas, IOM: Sangean ATS-803A + built-in antenna.
Sheila Hughes, Morden: Sony ICF7600DS; Vega 206 + loop; Panasonic DR48 + 15m wire.
Rhoderick Illman, Thumrait, Oman: Sony ICF 7600DS + 23m wire
Colin Jermey, Ruislip: Ross RR8 portable + built-in whip.
Cyril Kellam, Sheffield: Realistic DX360 or Sony ICF-7600DS + AN-1 or 5m wire.
Bryan Kimber, Hereford: Realistic SX190 + vertical dipole or Zenith R7000.
Robert Lawrence, Cheltenham: Hitachi cassette radio + 20m wire.
Zacharias Liangas, Zaria, N.Nigeria: Sharp GF 9292 + inverted V antenna.
Patrick McKeever, Birmingham: Murphy CA5 + 75m wire.
Eddie McKeown, Co.Down: Tatung TMR 7602.
George Millmore, Wootton, I.O.W: Tatung TMR 7602 + loop or Racal RA17L + VLF converter + r.w.
David Minter, Portland: Toshiba RPF11L + 30m wire.
Dick Moon, George, S.Africa: Icom R-70.
John Nash, Brighton: Kenwood R5000 + Datong AD370.
Bart O'Brien, Co.Wexford: Sony ICF-2001D + hexagon loop or whip.
Sergei Oleynik, Kalush, Ukraine: Ishim-003 + 70m wire.
Fred Pallant, Storrington: Trio R2000 + r.w. in loft.
John Parry, Northwich: Realistic DX-400 + 33m wire.
Roy Patrick, Derby: Lowe HF 125 + 44m wire.
Ron Pearce, Bungay: Home built 0-V-1 straight RX.
Philip Rambaut, Macclesfield: Int.Marine Radio R.700M + r.w.
Kenneth Reece, Prenton: Icom R9000 + delta loop or JVC NRD 525 + r.w.
Alan Roberts, Quebec, Canada: Lowe HF225 + dipoles.
Chris Shorten, Norwich: Matsui MR 4099 + 10m wire.
Alan Smith, Northampton: Matsui MR4099 + a.t.u. + dipole.
Cliff Stapleton, Torquay: Trio R1000 + dipole or 25m wire.
John Stevens, Largs: Hammarlund HQ 180 or Icom R-70 + loop or r.w.
Darran Taplin, Brenchley: Yaesu FRG-7700 + FRA-7700 or FRT-7700 + Zepp.
Phil Townsend, London: Lowe SRX-30 + a.t.u. + r.w.
Ted Walden-Vincent, Gt.Yarmouth: Grundig Satellit 1400L + r.w.
Neil Wheatley, Lytham St.Annes: Sangean ATS 803 + built-in whip.
Jim Willett, Grimsby: RCA AR77 + 4m loop or Trio 9R-59DS + ATU + X dipole.
Ken Willis, Scarborough: Kenwood R-2000 + r.w.
Julian Wood, Elgin: Kenwood R2000 + Yaesu FRT 7700 ATU + 5m wire.

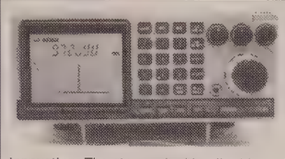
Station Addresses

BBC Radio Lincolnshire, Radion Buildings, Newport, Linclon LN1 3EU8.
ILR Moray Firth Radio, P.O.Box 271, Scorguie, Inverness IV3 6SF.
Radio KTBN, P.O.Box 7040, Salt Lake City, UT 84107, USA.
Turkiye Radyo Televizyon Kurumu, Nevzat Tandogan Caddesi 2, Kavaklidere, Ankara, Turkey.
Radio VOCM, Box 8-590, St.John's, Newfoundland A1B 3P5.
Radio WOGL, City Line and Monument Aves, Philadelphia, PA 19131, USA.

Abbreviations

Am	Amharic	Jap	Japanese
Ar	Arabic	Mal	Malay
Chin	Chinese	Nep	Nepali
Cz	Czechoslovakian	Norw	Norwegian
Du	Dutch	Port	Portuguese
Eng	English	Russ	Russian
Fa	Farsi	Sin	Sinhala
Fin	Finnish	So	Somali
Fr	French	Sp	Spanish
Ger	German	Sw	Swedish
Gr	Greek	Tag	Tagalog
Hi	Hindi	Tah	Tahitian
Ic	Icelandic	Tur	Turkish
Ind	Indonesian	Ur	Urdu
It	Italian		

AX700E



AT LAST – a scanner from Standard! For longer than I care to remember people have been asking why Standard do not make a scanner – well now they do. I now have 'English speaking' leaflets available which an s.a.e. will bring you post haste. You can see from the photograph that the AX700E has maintained Standard's reputation for innovation. The strange looking liquid crystal display not only shows the frequency, mode and so on, it is also a panadaptor! For those of you who are new to scanning I had better explain what that is. The vertical line on the left hand side of the display is to show signal strength and the horizontal line along the bottom is the frequency range. This range can be set to 100, 250 or 1000kHz. The frequency displayed at the top is the frequency at the centre of the line. In other words, if the displayed frequency is 145.50MHz and the width of the display is set to 1000kHz. then the left hand side would be 145.00MHz and the right hand side would be 146.00MHz. Now comes the magic. Every time a signal comes up within that frequency range (i.e. 145-146MHz). It will show up as a spike on the display. The height will show the signal strength and the position will indicate the frequency. By simply turning the tuning knob a cursor can be slid along to line up with the new signal and its exact frequency will be displayed at the top of the screen! To receive the new signal, just press a button and that signal becomes the one that is heard and the display will shift to place it in the middle of the screen. The width of the spikes is governed by the setting of the step size (10, 12.5, 20 or 25kHz) so you can see that it is possible to monitor the activity on up to 100 channels simultaneously. If, for instance, you are looking for a specific signal but you only know the band that it is in and not the spot frequency, just set up the appropriate band edges and then sit back and watch the display. Any signals that then appear can be instantly spotted and tuned to in seconds. That's what a panadaptor can do for you!
As for the rest of the scanner, it covers 50 to 904 995MHz with AM and FM (wide & narrow), it is powered by 13.8V dc and it measures just 180mm W x 180mm D x 75mm D. Come into the shop and see for yourself. You can even play with our new active antenna which should be ideal for use with this set. Norman G4THJ

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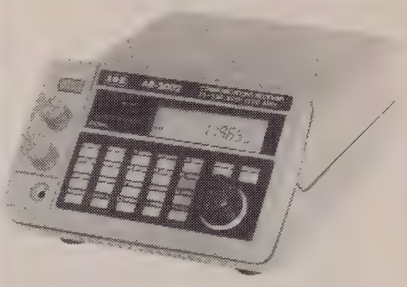
AR-2002



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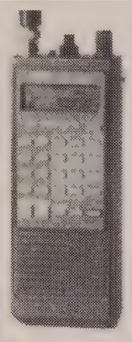

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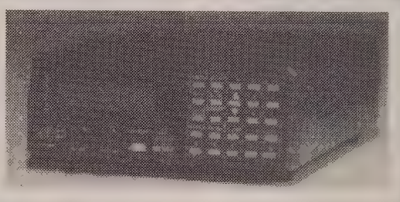

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OFF THE RECORD
Pirates

Well, here is the long awaited pirate column. There will no doubt be suggestions that SWM has gone quite potty in supporting pirate stations that cause interference, anarchy and mayhem, to an orderly well managed radio spectrum. In actual fact, we are not supporting pirates, or condoning any illegal acts, but just reporting what can be received by anyone with a radio.

The pop music station BBC Radio One, owes its very conception to the ship-board 'pop pirates' of the 60s. It was this same pressure that brought about the introduction of both BBC and Independent Local Radio. In 1981, Citizens Band radio was granted legality, but only after so many thousands of radio sets had been imported enforcement became an impossibility. The short wave pirates could well make a future government consider ending the BBC monopoly in British short wave broadcasting. It also has to be accepted that these stations have a certain amount of anti-establishment appeal, can be fascinating to listen to, and because of their usual low power could be regarded as DX.

Swinging Radio England

I just had to start this series with a picture of a pirate ship, this is the MV *Laissez Faire*, which housed two radio stations, Radio England and Britain Radio, and broadcast from 5.5km off the Essex coast from May 1966 to August 1967. Within the hold of the ship were two identical air conditioned studios, and two matching 55kW m.w. transmitters. Power was supplied by two Cummings diesel generators. The American owners of this station, Pier Vick Ltd., went into liquidation after a year, after which a British Company, Carsead Advertising took over until the Government passed the Marine Offences Act, which made ship-board stations illegal.

The *Laissez Faire*, previously called the *Olga Patricia*, had its 64m mast removed in Holland before returning to the USA.

Hobby Pirates

Most of the pirates received on short wave are amateur broadcasters who are either seeking 'on air' experience for a possible future career, or others wishing to be involved in radio only in their spare time. Many full-time occupations also have their amateur equivalents, like dramatics, shooting, photography and art, even the police and the army have their Specials and Territorials. As yet, no facilities exist for a non-professional training ground for broadcasting personnel. As with any public property, be it the highway or the radio spectrum these have to be rules to prevent utter chaos and confusion. It is because of this transmitter operators have to be licensed, unauthorised use is illegal and the consequences quite severe. Because of this, SWM will not encourage anyone to infringe the terms of the Wireless Telegraphy Act, with illegal transmitting. My own advice to monitors is to incorporate these stations as a small part of the very wide scope short wave radio encompasses.

Windows to Watch

New listeners should try between 6.2 and 6.4MHz on Sunday mornings. You will find a number of legal stations here including Radio Fax, which has been known to broadcast Radio Caroline programmes, HCJB and Radio Vatican. These frequencies were originally for maritime mobile communications. Also worth trying is 11.4 to 11.5MHz and possibly around 15MHz. Medium wave pirates tend to use frequencies just above the official band, try after dark between 1.608 and 1.628MHz. Further information will be included using readers' logs next quarter.

Radio Caroline

This station, which has been off the air for some time, now has formed a British company, Radio Caroline (UK) Ltd., with the intention of applying for a licence to operate a legitimate service. During April, Radio Caroline programmes were broadcast over the Astra satellite, on a channel previously used by Radio Nova. The radio ship *Ross Revenge* has a caretaker crew aboard, but with the effects of the Broadcasting Bill, its future is uncertain.

Some time ago, the BBC2 *Arena* programme consisted of an hour long documentary on the history of Caroline, although informative, it seemed lacking in coverage, particularly over the more recent years.

Radio New York Int

This station, once in the news over the broadcasts from their ship the MV *Sarah* have ceased pirate broadcasts. Worldwide Christian Radio relay their programmes on 7.52MHz to the USA. For details, you can write to Radio New York International, Box 270, Flushing, NY 11352, USA.

Check-Rock!

News now of an Eastern European pirate, Radio Ultra broadcasts to downtown Prague in Czechoslovakia. This land based station was once closed down by government officials, but since returning to the air no serious attempt has been made to prevent the transmissions.

Radio Ultra is run by students and plays mainly western rock music, on 92.6MHz f.m. The Federal Assembly is shortly to vote on a broadcasting bill that will legalise commercial radio in Czechoslovakia (Radio Prague).

RNI Takes to the Sky

Older readers will remember the 70s pirate station Radio Noordsee International, that broadcast from the MV *Mebo 2* in both Dutch and English. This has returned with a mainly Dutch service, but it's all quite legal, they use the Intelsat satellite feeding Dutch and Norwegian cable networks. I am told the *Man of Action* theme tune and some original jingles are in use.

Peace in the East?

I have received conflicting reports regarding Abe Nathan's Peace Ship during the Iraq conflict. Perhaps *SWM* has a reader that is able to monitor the Voice of Peace on 1.539MHz in Israel and send me a report?

Andy...Who?

Before falling off the end of this page, a quick word of introduction, as unlike most of the regular contributors to *SWM* I am not a qualified technical genius, far from it! For my sins, I am an ex-pirate radio disc jockey (circa 1966), I worked on a few of the marine based stations of that era under the name of 'Martin Kayne'. My hope is that we can produce a not too serious view of this aspect of our hobby, compiled within the confines of the law. Reception logs are welcome and will be an important feature of future articles. My address is at the foot of the page. Station news will also be covered, but due to publication time, stories tend to be available in radio DX programmes before *SWM* reaches the bookstand. Anyway, do send in your comments and suggestions, as the better the response the more comprehensive future columns will be.

Crystal Voyagers

Here are just a few station I have received usually on Sunday mornings, or Bank Holidays.

11.5MHz	Radio Waves International
6.24MHz	Rocket 48
11.415MHz	Radio Stella Int
6.206MHz	Radio Orang Utan
6.31MHz	Weekend Music Radio
6.316MHz	Radio Titanic
6.275MHz	West & North Kent Radio
6.225MHz	Britain Radio Int
6.29MHz	Radio Orion
6.278MHz	Live Wire Radio
6.286MHz	Atlanta Radio (Now closed)

Fig. 1: A starboard view of the MV* Laissez Faire*, the mast at the stern was for TV reception.

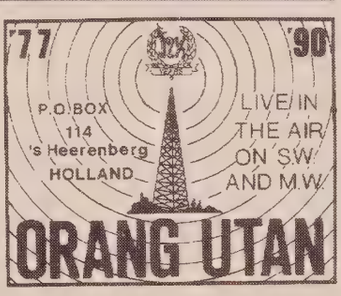

Fig. 4: A sticker from a long-standing Dutch pirate station.

Andy Cadier, 28 Romney Avenue, Folkestone, Kent CT20 3QJ.

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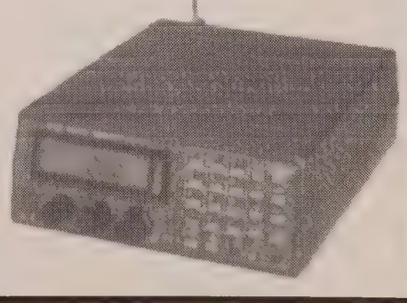

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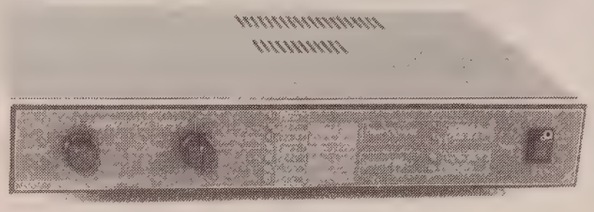

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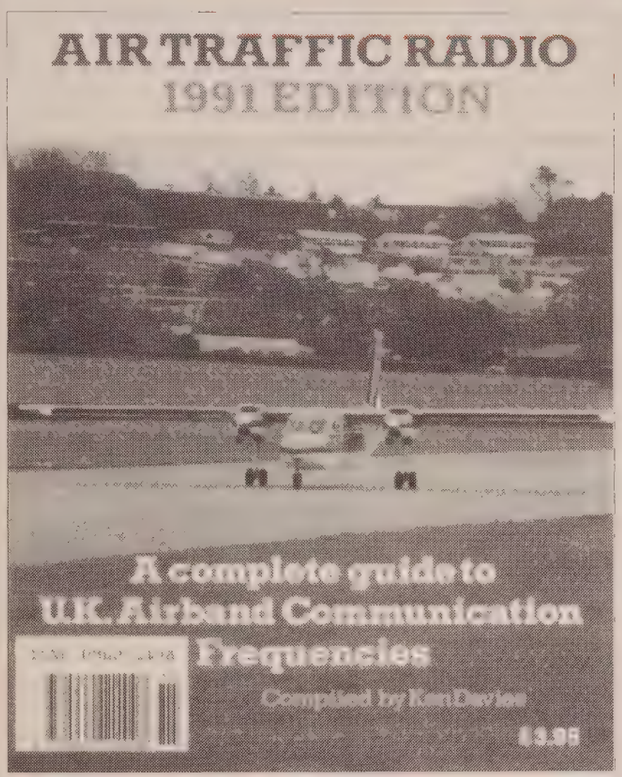

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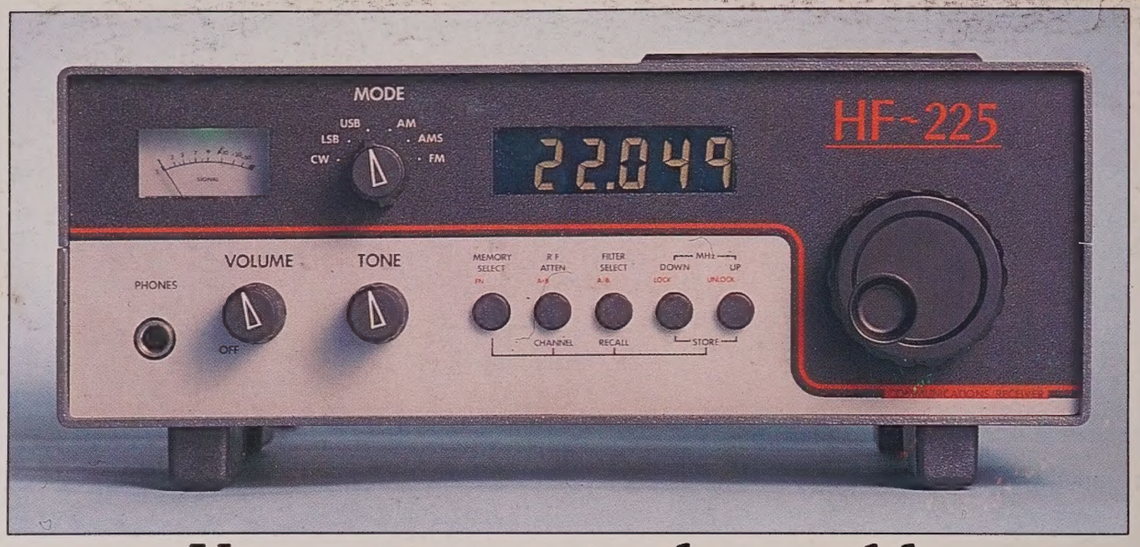
THE HF-225 GENERAL COVERAGE RECEIVER



Your gateway to the world

What ever you want to hear, wherever you want to hear it, the HF-225 will give you that gateway to the world.

Technically, the HF-225 distinguishes itself by having a low phase noise synthesiser which gives performance not far off that of "professional" receivers costing up to ten times the price. And that's not just advertising talk; it is really true. The receiver actually tunes in steps of 8Hz, which betters most other receivers and gives a smooth "VFO" feel when tuning. As one user has already commented: "If you tuned the HF-225 with your eyes closed, you would believe you had a £5,000 receiver on the table."

The HF-225 has a range of popular low-cost options ; like a key pad for direct frequency entry which plugs into a rear panel socket, an active whip aerial, a rechargeable battery pack for portable use and an attractive carrying case which protects the receiver whilst in full operational use. The D-225 detector option is really something special because it gives true synchronous AM detection for dragging sensible programme quality out of a signal affected by selective fading distortion. The same option also gives narrow band (communications) FM.

Every listener these days appreciates a receiver which offers facilities for memorising favourite or regularly used frequencies and the HF-225 offers 30 memory channels for this purpose. Using the memories has been made particularly versatile because the operator can review the contents of the memories while still listening to the frequency he is using. Alternatively, in the "Channel" mode, he can tune through the memory channels using the main tuning knob, listening to each frequency as it appears on the display. Just like having a bank of single channel receivers under your control. Great for checking BBC World Service frequencies in a hurry.

Unlike most HF receivers on the market, the HF-225 comes complete with filters fitted for every mode - 2.2kHz, 4kHz, 7kHz and 10kHz. There is also a 200Hz audio filter for CW and if the D-225 detector is fitted, a 12kHz filter for FM. The correct filter for each mode is automatically selected by the receiver mode switch but further selection can be made by the user from the front panel and the receiver remembers which filter was used. True versatility and all built in - at no extra cost.

At the end of the day, what can the HF-225 offer you as a user? Let me quote Chris Williams who wrote from Massachusetts:

"I received my Lowe HF-225 about a week ago. Since then I have enjoyed many pleasant hours listening to it. As a past owner of receivers such as the Sony ICF-2010 and Grundig Satellit 650 and 500, I must say that none compares to your Lowe HF-225. Without question, for hour after hour listening, nothing compares. I especially like the Genie keypad. Why more receivers do not incorporate such intelligent ergonomics is beyond me."

That just about says it all, but on top of all the praise from users, the HF-225, following its launch, was voted "Receiver of the Year" by World Radio and TV Handbook.

Why don't you find out why the HF-225 opens that gateway to the world.

HF-225 30kHz-30MHz	**£429.00**
K-225 Keypad Controller	**£40.36**
D-225 Synchronous AM/FM Detector	**£40.36**

AND RECENTLY ANNOUNCED ...
The HF-235 professional monitor receiver. Already in use by monitoring stations and widely accepted as a new mid-price entry into this most demanding market.

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CAMBRIDGE: Tel 0223 311230 ***DARLINGTON**: Tel 0325 486121 ***GLASGOW**: Tel 041-945 2626 **LONDON (MIDDLESEX)**: Tel 081-429 3256 **LONDON (HEATHROW)**: Tel 0753 45255 ***Closed all day on Mondays**